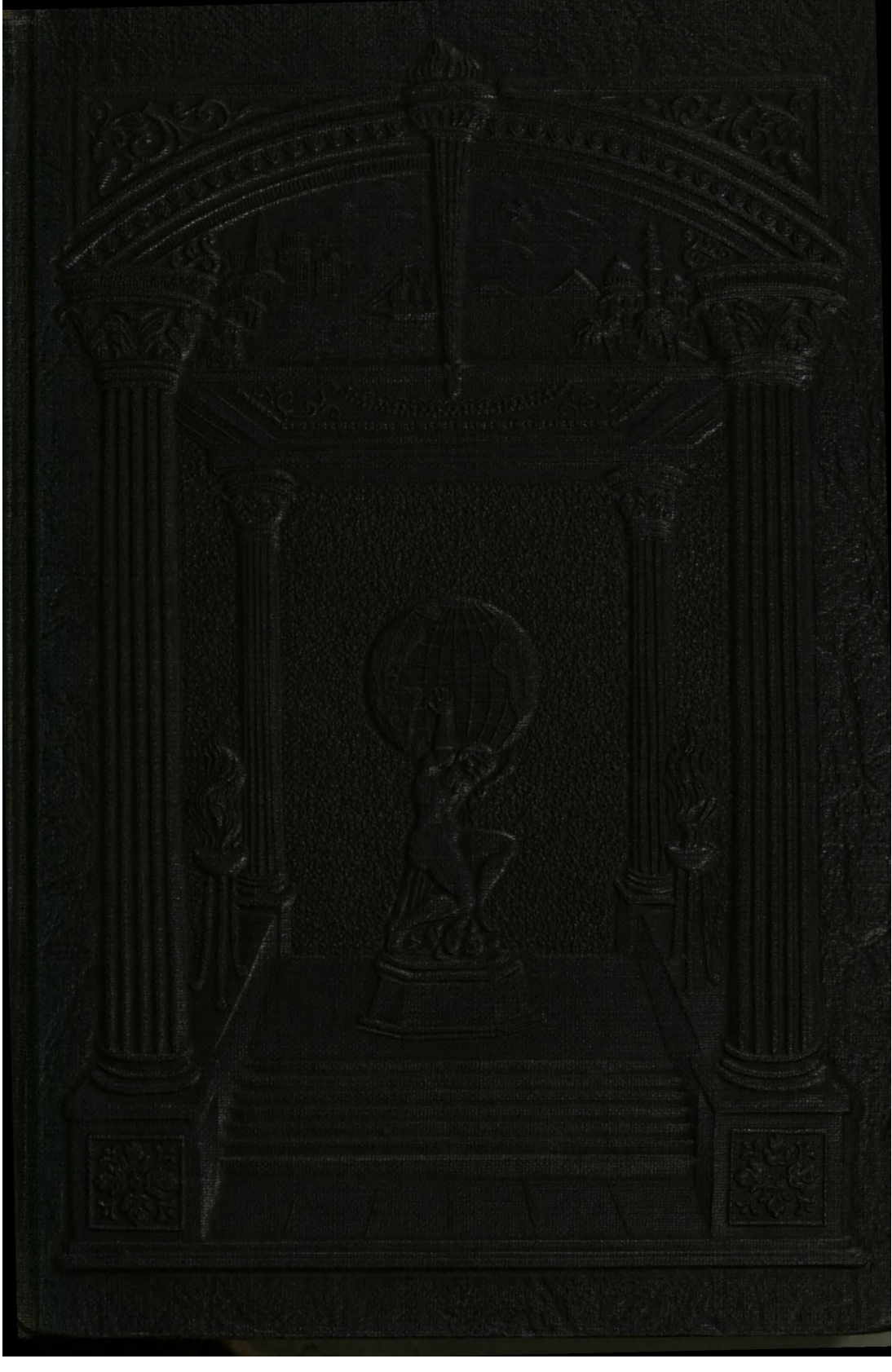



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Telelectroscope, an electrical apparatus for transmitting over a wire and reproducing at a distance images of objects in their natural colors.

Telemachus, in mythology, the son of Ulysses and Penelope; was an infant when his father left home to join in the war against Troy; but during his 20 years' absence grew into manhood. His quest for his long-lost sire, guided by Athene disguised as Mentor, his return to Ithaca where he found his father in the guise of a beggar, and their slaying of Penelope's troublesome suitors, forms one of the pleasing tales of mythology.

Telemicrophone, a combined apparatus simultaneously producing the effects of the microphone and the telephone, and reversible like the latter.

Telemobiloskop, a German invention in 1906, which, by electric waves, automatically registers the approach of one ship to another.

Teleology, in philosophy, a branch of metaphysics; the doctrine of final causes and of the uses which every part of nature was designed to subserve; the argument from design in proof of the existence of God.

Teleosaurus, a genus of fossil crocodiles, the remains of which occur in the lower Jurassic rocks. They are found associated with marine fossils, and the peculiar modification of their skeleton seems to have specially fitted them for an aquatic life.

Telepathy, the power of communication between one mind and another by means unknown to the ordinary sense organs.

Telephone, an instrument for transmitting sounds or speech to distances where such would be inaudible through aerial waves. The true inventor was undoubtedly Philip Reis, who showed, in 1861, that variations in an electric current caused by a vibrating membrane could reproduce the necessary vibrations. Reis transmitted musical sounds and even words; but his apparatus was imperfect, and it was reserved for Alexander Graham Bell to perfect that which is still commonly used and known as the Bell telephone. In 1892 a long-distance telephone was erected between Chicago and the larger E. cities and has since been in successful operation. In 1902 a patent was sought in the United States for a wireless telephone service, which the inventor claimed was equally practicable under water and on land. The invention of Dr. Michael I. Pupin of Columbia University, New York city, enables the telephone, overland or submarine, to be used over a distance of 3,000 miles, and has perfected the use of the long distance telephone between such distant points as New York and San Francisco. Of the utmost simplicity, the device consists of putting coils of wire at certain intervals about the wire which transmits the waves of sound. The device makes a difference in the vibrations and preserves them at a greater distance. The establishment of telephonic communication between London and New York is projected, although mechanical difficulties are to be overcome owing to the bulk of the induction coils. In telephonic cables between England and France, and also Ireland, the introduction of induction coils has improved their capacity by one hundred per cent. Prof. Slaby of Germany, reported in 1906 successful results attained in wireless telephony over a distance of 24 miles. Recent achievements in wireless telephony were the sending of messages a distance of 60 miles in Germany in 1907; a distance of more than 100 miles between a French cruiser and land in 1909; the establishment of clear communication through 1,300 yards of solid earth in England in 1910; and the exchange of messages between Washington (Arlington Station) and the Pearl Island naval station in Hawaii, a distance of 4,900 miles. on Sept. 29, 1915.

Telephotograph, The Rapid, officially called "rapid telegraph," an invention which transmits as many as 160,000 words per hour on a single wire if the voltage and resistance of the line be sufficient, and to obtain telegrams in ordinary handwriting instead of the variation of the Morse alphabet. The apparatus, though looking rather complicated, is a marvel of simplicity in construction and handling. The chief advantages are an enormous speed on wires with very low voltage currents, a permanent and clearly legible automatic record in

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usual handwriting, automatic control of the receiver from the sending station, transmission from perforated paper and automatic receiving by photographing the movements of telephones' diaphragms (membranes).

Telescope, an optical instrument to assist the naked eye in examining distant objects, by magnifying the apparent angular dimensions of the object, and by collecting more light than the pupil of the eye could alone do to form the image on the retina.

Telescope Fish, or **Telescope Carp,** in ichthyology, the most highly-prized of the many varieties of the goldfish.

Telescopium, one of the 14 S. constellations added to the heavens by Lacaille in connection with his work at the Cape of Good Hope. It is not a conspicuous constellation, its brightest star being of 3.5 magnitude.

Telescriptor, The, a long-distance typewriter. This instrument is formed on the order of a typewriter, but furnished with an electric current under each key so that when a key is depressed at one end of the wire instantaneous currents can be sent to any distance. The operator strikes the keys exactly as if he were writing on a typewriter, and the words come out on a strip of paper that unrolls before him, while at the same time the message is being written before the eyes of the man at the other end of the line. The peculiar value of the "telescriptor" is that it leaves a printed record of communication both with the sender and the receiver.

Telespectroscope, in optics, an instrument for observing the light from the planets and fixed stars, for ascertaining their physical condition and the composition of their atmospheres.

Telestereoscope, an instrument for producing an appearance of relief in the objects of a landscape at moderate distances. It consists of a frame, two plane and two central mirrors, the former receiving and passing light days to the latter in which they are viewed.

Television, an electrical device by which the person on the receiving end may see what is taking place at the transmitting or sending end. It was developed by the Bell Telephone Laboratories, Inc., and first publicly demonstrated in April, 1927. Not ouly the features but also a moving likeness of the speaker was transmitted to another station in New York by telephone lines from Washington, D. C., and later by telephone and radio from Whippany, N. Y. Returned to the laboratories for further improvement under direction of Dr. Ives and his assistant, Dr. Jewett.

Telharmonium, an instrument perfected in 1906 by Dr. Thaddeus Cahill, to convey music over wires. It produces musical tones by different electrical currents, generated by hundreds of dynamos, and from the New York Headquarters, Telharmonic Hall, Broadway and 39th St., transmits music to buildings and homes many miles distant by the manipulation of an operator at a special keyboard.

Tell, William, the champion of Swiss liberty; was a native of Burglen, in the canton of Uri. He was distinguished by his skill in archery, his strength and courage. He joined the league of the Three Forest cantons formed to free the country from Austrian tyranny. The Austrian governor of Switzerland, Herman Gessler, pushed his insolence so far as to require the Swiss to uncover their heads before his hat, and is said to have condemned Tell, who refused to comply with this mandate, to shoot an apple from the head of his own son. Tell was successful, but confessed that a second arrow, which he bore about his person, was intended, in case he had failed, for the punishment of the tyrant, and he was therefore retained prisoner. While crossing the Lake of the Four Cantons, or Lake of Lucerne, in the same boat with Gessler, a violent storm arose. Tell, as the most vigorous and skillful helmsman, was set free, and he conducted the boat successfully to the shore, but seized the opportunity to spring on a rock, at the same time pushing off the boat. On this rock, since called the Rock of Tell, a commemorative monument or chapel has been erected. When the governor finally escaped the storm, and reached the shore, Tell fatally shot him. This event was the signal for a general rising, and a most obstinate war between the Swiss and Austrians,

which was not brought to a close till 1499.

Teller, Henry Moore, an American statesman; born in Granger, N. Y., May 23, 1830; was admitted to the bar in 1856; practiced law in Illinois; went to Colorado in 1861; was Major-General of the Colorado militia; in 1862–64; U. S. Senator in 1876–82 and 1885–1909; Secretary of the Interior in 1882–85. He died Feb. 23, 1914.

Tellurion, an apparatus for the purpose of illustrating to the eye the real and apparent movements of the earth.

Telpher Line, in electricity, a line on which transportation is automatically effected by the aid of electricity. It is composed of two sets of steel rails, supported on wooden T-shaped posts. A wire is supported on each end of the cross-piece of the T. The carriers are of iron, furnished with handles by which their contents are tilted over by a man with a pole, or automatically tilted by these handles coming successively into contact with a wooden arm standing out from the post where it is desired they should be emptied. The great practical advantage of a telpher line is that it can be carried through a district without any interference with the fields, rivers, or roads, that cutting and tunneling are not necessary, and that no ground has to be purchased, as for ordinary railways.

Telugu, or Telinga, one of the languages of India, belonging to the Dravidian group, and spoken in Southern India by about 17,000,000 people.

Temperament, that individual peculiarity of physical organization by which the manner of acting, feeling, and thinking of each person is permanently affected.

Temperance Movement, a movement designed to minimize or to abolish the use of alcoholic liquors as beverages. The first total abstinence pledge was drafted by Micaiah Pendleton of Virginia. Not, however, till 1836 was the American Temperance Union formed on the basis of total abstinence. In 1840 the Washingtonians were founded in the city of Baltimore, and in 1842 the Sons of Temperance were instituted in New York city. From 1845 commenced the various orders with ritual and insignia, which have gradually been extended to or imitated in Europe. In 1838 Father Theobald Mathew became the apostle of temperance for Ireland, and by the end of 1839 obtained 1,800,000 recruits to the cause. In 1868 the Independent Order of Good Templars, probably the most widespread of all temperance organizations, was planted in England by Joseph Malins. The feeling in favor of temperance is steadily growing, and the numerous societies with their large membership constitute a very potent social and political force.

The National Woman's Christian Temperance Union, with its auxiliary state and territorial unions, besides that of the District of Columbia, is the largest society ever composed exclusively of women and conducted entirely by them. It has been organized in every State and Territory of the nation, and locally in about 10,000 towns and cities. This society did much to bring about the passage of the Eighteenth Amendment to the Constitution by which act it became unlawful to manufacture, sell or transport intoxicating liquors within the U. S.

Temperature, the thermal condition of a body which determines the interchange of heat between it and other bodies. Our first ideas of temperature are derived from our sensations of hot and cold. The effect of adding heat to a body is to make it hotter, unless it is at its melting or boiling point. In meteorology the distribution of atmospheric temperature is one of the most important problems calling for discussion.

Temperature of the Body. The terms cold-blooded and warm-blooded animals serve roughly to indicate, the former, those animals which possess a temperature little raised above that of the surrounding medium; the latter, those with one considerably higher. Fishes, frogs, and reptiles are cold-blooded animals. while birds and quadrupeds are warm-blooded. The circumstances which influence the temperature of the human body in health are varied. The normal temperature of the internal parts varies from

98.5 to 99.5. The average temperature of the armpit is 98.6. In infant life the temperature is about 1° F. above that of the adult; and the temperature of old age resembles that of infancy. The temperature of the female slightly exceeds that of the male; and the temperature of the human body falls to its lowest level in the early morning.

Tempering, in metal work, the process of producing in a metal, particularly steel, that peculiar degree of hardness and elasticity which adapts it for any of the purposes to which it is to be applied.

Templars, a famous military order, which owed its origin to the Crusades. In the year 1119 two comrades of Godfrey de Bouillon, Hugues de Payen and Geoffroi de Saint-Adhemar, bound themselves and seven other French knights to guard pilgrims to the holy places from the attacks of the Saracens, taking before the patriarch of Jerusalem solemn vows of chastity, poverty, and obedience. King Baldwin II. gave them for quarters part of his palace, which was built on the site of the Temple of Solomon close to the Church of the Holy Sepulcher. Hence they took their name as Templars, and the houses of the order that of the Temple. At the Council of Troyes (1128) Bernard of Clairvaux drew up its rule in 72 statutes, substantially the groundwork of the statutes as finally revised in the middle of the 13th century. The order at first consisted of knights alone, but later its members were grouped as knights, all of noble birth, chaplains, and men-at-arms, besides mercenaries, retainers, and craftsmen affiliated, and enjoying its protection. The knights took the vows for life or for a certain period, and they alone wore the white linen mantle, with the eight-pointed red cross on the left shoulder, and white linen girdle; black or brown garments were worn by all others. The seal of the order showed the Temple, later two riders — a Templar and a helpless pilgrim — on one horse.

The discipline of the order was austere, excluding all needless luxury or display in food, dress, or armor, and all worldly pleasures were forbidden. Married brethren were admitted, but no women might enter the order, and all brethren were enjoined to shun the kiss of a woman. The beard was worn, the hair cut short, and all slept alone in shirt and breeches, with a light constantly burning. At the head of the whole order stood the Grand-master; under him Masters, Grand Priors, Commanders, or Preceptors ruled the various provinces. Second in command to the Grand-Master stood the Seneschal, his deputy; next the Marshal, whose business, moreover, was to provide arms, horses, and all the material of war. Visitors-general conveyed the commands of the Grand-master and convent or chapter of Jerusalem to the various provinces, exercised discipline, and settled disputes. The Prior or Preceptor of the kingdom of Jerusalem, also styled Grand-preceptor of the Temple, was also general treasurer of the order. The Templars were by a papal bull in 1172 rendered independent of the authority of the bishops, owning allegiance to the Pope alone, the immediate bishop of the entire order. It was their proud boast that 20,000 of their number perished for the cause in Palestine; of their 22 Grand-masters seven died on the field of battle, five of their wounds, one of voluntary starvation a prisoner in the hands of Saladin. The most famous successors of Hugues de Payen (died 1136) were Bernard de Tremelai, who fell at Ascalon in 1153; Eudes de Saint-Amand (died 1179), Gerard de Riderfort, who died in battle under the walls of Acre in 1189; Robert de Sable, who aided Richard Cœur de Lion to gain a glorious victory in the plain of Arsouf (1191), and bought from him the island of Cyprus, which was soon transferred to Guy de Lusignan, whereupon Acre became the seat of the order, the famous stronghold of Pilgrim's Castle being built, whose stupendous ruins exist to this day; Peter de Montaigu, whose courage helped to take Damietta in 1219; Hermann de Perigord, who rebuilt the fortress of Safed; Guillaume de Sonnac, slain beside St. Louis at the Nile in 1250; Thomas Berard, under whom Safed was lost in 1266, Jaffa and Antioch in 1268; and Guillaume de Beaujeu, fell in the bloody capture of Acre in 1291. The remnant of the Templars sailed to Cyprus, and the

latest dying gleams of the order's vigor in the East were the attempts to capture Alexandria (1300), and to establish a settlement at Tortosa (1300–1302) under the last and most ill-fated of its grand-masters.

The Templars had failed in their work; their usefulness was past; the order had now only to sink into extinction in one of the darkest tragedies of history. The Grand-master Jacques de Molay, was summoned from Cyprus by the Pope in 1306; he went taking with him the treasure of the order, and awaited his fate in France. On Oct. 13, 1307, the Grand-master and 140 Templars were seized at the Temple and flung into prison. Two degraded Templars supplied some of the charges Philip required; tortures, infamous beyond the infamies of the Inquisition, provided the remainder. In August, 1308, Clement sent throughout Christendom the 127 articles of interrogation for the accused, and evidence in detail, self-contradictory beyond all parallel, was quickly accumulated.

On May 12, 1310, 54 knights were slowly burned to death. The Pope laid the order under perpetual inhibition, and transferred its property to the Hospital of St. John of Jerusalem.

Temple, an edifice erected and dedicated to the service of some deity or deities, and connected with some system of worship. The term is generally applied to such structures among the Greeks, Romans, Egyptians, and other ancient nations. It is also an edifice erected among Christians as a place of public worship; a church.

Temple, Solomon's, the building reared by Solomon as a habitation for Jehovah. David had planned the Temple, but was divinely forbidden to erect it, as he had shed so much blood in his wars. He made great preparations for his son and successor, who, he learned from the prophet Nathan, was destined to achieve the work. It was built on Mount Moriah, chiefly by Tyrian workmen, and had massive foundations. The stone for its erection was dressed before its arrival, so that the edifice arose noiselessly; the floor was of cedar, boarded over with planks of fir; the wainscoting was of cedar, covered with gold, as was the whole interior. It was modeled inside on the tabernacle, which was Jehovah's dwelling while journeyings were continually taking place. There was a Holy and Most Holy Place. The Temple was surrounded by an inner court for the priest. There was also a Great or Outward Court, called specially the Court of the Lord's House. This temple was destroyed by the Babylonians during the siege of Jerusalem under Nebuchadnezzar. On the return from Babylon, a temple, far inferior to Solomon's, was commenced under Zerubbabel, B. C. 534, and, after a long intermission, was resumed B. C. 520, and completed B. C. 516, under Darius Hystaspes. The second temple was gradually removed by Herod, as he proceeded with the building or rebuilding of a temple designed to rival the first rather than the second. The work was commenced B. C. 21 or 20; the temple itself was finished in about a year and a half, the courts in eight years, but the subsequent operations were carried on so dilatorily that the Jews reckoned 46 years as the whole time consumed. In the courts of this temple Jesus preached and healed the sick. It caught fire during the siege of Jerusalem under Titus, and was burned to the ground.

Temple, Oliver Perry, an American lawyer; born in Green co., Tenn., Jan. 27, 1820; was graduated at Washington College, Tenn., in 1844, and was admitted to the bar in 1846. President Fillmore made him a commissioner to visit the Indian tribes of New Mexico, Arizona, and California in 1850. Prior to and during the Civil War he was one of the Union leaders in Eastern Tennessee. He was chancellor of Tennessee in 1866–1878; retired in 1881; died in 1907.

Temple, Sir William, an English statesman; born in London, in 1628; was educated at Emanuel College, Cambridge. After the Restoration (1660) he was nominated one of the commissioners from the Irish Parliament to the king. In conjunction with DeWitt he concluded the treaty between England, Holland, and Sweden (Triple Alliance, 1668). He attended, as ambassador extraordinary, when peace was concluded between France and Spain at Aix-la-Chapelle in 1668, and subsequent to that time re-

siding at The Hague as ambassador, became familiar with the Prince of Orange, afterward William III. Recalled in 1669, remained in retirement till 1674, when he was again ambassador to the States-General (1679). He was instrumental in promoting the marriage of the Prince of Orange with Mary, eldest daughter of the Duke of York (James II., 1677). Shortly after his return he was elected to Parliament. In 1681 he retired from public life altogether. He died in Moor Park, Surrey, Jan. 27, 1699.

Temple, William Greenville, an American naval officer; born in Rutland, Vt., March 23, 1824; was graduated at the United States Naval Academy in 1846; entered the navy as midshipman in 1840; served with distinction in the Mexican War. He was on duty at the United States Naval Observatory in 1848; engaged in surveying the Florida reefs and the Gulf stream in 1848–1850; had charge of the surveys and hydrographic work for the projected canal and railroad across the Isthmus of Tehuantepec in 1850–1852; and was on coast survey duty in 1852–1859. He was promoted master in 1854, and lieutenant in 1855. He served throughout the Civil War. He was promoted commander in 1865, captain in 1870, commodore in 1878, and rear-admiral Feb. 22, 1884, and was retired the following week. He died in Washington, D. C., June 28, 1894.

Temple Society, a body of German Christians who wait for the second coming of Christ.

Templet, a pattern whose edge is dressed and shaped to the required conformation, and is laid against the object made so as to test its conformities thereto.

Temporal Power, the power which the Pope exercised as sovereign of the States of the Church. Pius VII. was partially deprived of his dominions by Napoleon I. in 1797, and entirely in 1808. The Pope replied by a bull of excommunication; he was then arrested and kept a close prisoner in France till the fall of Napoleon in 1814, when he was reinstated in the government of an undiminished territory. In 1870 Victor Emmanuel, King of Italy, took possession of the papal territory, leaving to the Pope only the Vatican.

Temporary Star, a star appearing for a time, and then gradually vanishing away. In November, 1572, a star burst out in Cassiopeia with a brilliancy greater than that of any one near it. It rapidly increased in magnitude till it became visible at noon. Then it diminished in size, and in March, 1574, became invisible to the naked eye, nor has it been seen since.

Tenacity, that property of material bodies by which they are able to resist a severe strain without rupturing or splitting.

Tenail, or Tenaille, in fortification, an outwork or rampart raised in the main ditch immediately in front of the curtain between two bastions.

Tenant, in law, one who occupies, or has temporary possession of lands or tenements, the titles of which are in another, the landlord.

Tench, the sole species of a fish found all over Europe in stagnant waters with soft bottom. Like most other carps it passes the winter in a torpid state, concealed in the mud.

Tender, in law, an offer of money or other thing in satisfaction of a debt or liability. Legal tender, coin or paper money, which, so far as regards the nature and quality thereof, a creditor may be compelled to accept in satisfaction of his debt. In this country gold and silver coin are a legal tender to any amount, so far as a debt admits of being paid in gold or silver; and national treasury notes or greenbacks are also legal tender.

Tender, a small vessel appointed to attend a larger one, and employed for her service in procuring stores, etc. In railways a tender is a carriage attached to the locomotive for carrying the fuel, water, etc.

Tendon, the white fibrous tissue reaching from the end of a muscle to bone or some other structure which is to serve as a fixed attachment for it, or which it is intended to move. Tendons have been divided into (1) Funicular, or rope-like, as the long tendon of the biceps muscle of the arm. (2) Fasicular, as the short tendon of that muscle and as the great majority of tendons generally. (3)

aponeurotic or tendinous expansions, sometimes of considerable extent, and serviceable in strengthening the walls of cavities, as the tendons of the abdominal muscles. The tendons commence by separate fascicles from the end of each muscular fiber, and they similarly terminate by separate fascicles in distinct depressions in the bones, besides being closely incorporated with the periosteum. The tendons most frequently ruptured are the Achilles Tendon, and the tendons of the rectus femoris and the triceps humeri.

Tendotome, in surgery, a subcutaneous knife, having a small oblanceolate blade on the end of a long stem, and used for severing deep-seated tendons without making a large incision or dissecting down to the spot.

Tendrac, in zoölogy, a small insectivorous mammal, from Madagascar. It is about two-thirds the size of the common hedgehog.

Tendril, in botany, a curling and twining thread-like process by which a plant clings to another body for the purpose of support. It may be a modification of the midrib, as in the pea; a prolongation of a leaf, as in Nepenthes; or a modification of the inflorescence, as in the vine. They have been divided into stem tendrils and leaf tendrils. Called also cirrhus, and by the old authors capreolus and clavicula.

Tenebræ, the office of Matins and Lauds in the Roman Catholic Church for the Thursday, Friday, and Saturday in Holy Week, sung on the afternoon or evening of Wednesday, Thursday, and Friday respectively with extinguished lights. The extinction of the lights is said to figure the growing darkness of the world at the time of the Crucifixion, and the last candle is hidden for a time to signify that death could not really obtain dominion over Christ, though it appeared to do so. A noise is made at the conclusion of the office to symbolize the convulsions of nature at the death of Christ.

Tenebrionidæ, in entomology, a family of heteromerous beetles, tribe Atrachelia. Black or dull-colored insects, with a peculiar odor, slow in their movements and nocturnal in their habits. A few aberrant species are found on trees and plants. They feed generally on decaying animal and vegetable matter. About 5,000 species are known.

Tenement House, a house divided into tenements occupied by separate families. In tenement houses the landlord does not usually reside on the premises. In most large cities of the United States, owing to the exorbitantly high price of land whereon to build, the policy has obtained of building houses containing apartments to accommodate as many persons as can be crowded into them. These apartments are let by the landlord either in suites or by the single room.

In a legal sense the term "tenement" applies, in the United States, to the higher class apartment houses, as well as to the abodes of the poorest. Of late years there has been great improvement in New York and other cities in the construction of tenements. New York in particular has stringent laws for the well being of tenement residents, and unsanitary conditions are being fast eliminated. Rooms without apertures for air are no longer permitted, and there must be a certain amount of open space for every new building. The better class of tenements are usually called "apartments," and while the cheaper apartments have heat, hot water, gas and other comforts, the higher-priced are almost palatial in their luxurious fittings.

Teneriffe. See CANARY ISLANDS.

Teniers, David, the name of two famous Flemish artists; the father born in 1582; died in 1649; the son, born in 1610; died in 1690. Their pictures of rural scenes, fairs, markets, etc., are highly prized.

Tennessee, a State in the South Atlantic Division of North American Union; admitted to Union June 1, 1796; capital, Nashville; no. counties, 96; area, 42,022 sq. m.; pop. (1920) 2,337,885; (1930) 2,608,759.

Topographically, Tennessee is divided into three sections. East Tennessee is extremely picturesque. On its borders rise, in huge, ridge-like masses and treeless domes, the Appalachian mountains, stretching to the Cumberland mineral district, which has an average elevation of 2,000 feet above the sea,

and abounds in coal, iron, and other minerals. Middle Tennessee extends from the dividing line on the tableland to the lower Tennessee river; and West Tennessee from the Tennessee river to the Mississippi. The Unaka Mountains, a part of the Appalachian chain, run along the E. boundary, and have an average elevation of 5,000 feet above the sea. The Mississippi, with the Tennessee and the Cumberland, drains three-fourths of the State. The two latter are navigable for a considerable distance, and other rivers with numerous tributaries supply valuable water power.

The State is rich in its mineral resources, asbestos, kaolin, granite, copper, iron, manganese, barytes, clay, building stones, lead, and zinc being among the leading products. Coal measures occupy over 5,000 square miles in the Cumberland Mountain region.

In 1929 the value of the total mineral output was $38,789,000, the quantities divided as follows: coal, 5,680,000 long tons; iron ore, 102,000 long tons; copper over 20,000,000 lbs., zinc, 40,558 short tons.

In 1929 there were 1,137,000 acres devoted to the production of cotton yielding 515,000 bales valued at $42,488,000. The most important crop was corn of which 73,600,000 bus. were produced in the same year. On Jan. 1 1930, the number of farm animals were estimated as follows: 997,000 cattle; 741,000 swine; 256,000 milch cows; 366,000 sheep; 320,000 mules; 192,000 horses.

In 1927 there were reported for Tennessee 2,098 manufacturing plants, employing 114,968 wage earners, paying $101,198,000 for wages, and $351,436,000 for raw materials and yielding products having a combined value of $614,041,000. Lumbering and the manufacture of agricultural implements constitute the leading manufacturing industries.

In 1929 Tennessee had 99 National Banks with resources amounting to $3,421,000,000; demand deposits of $112,614,000 and time deposits of $108,865,000. The various state banks and trust companies had savings deposits amounting to $176,000,000.

School attendance is now compulsory and children under 16 years in workshops, factories, or mines is illegal. There are separate schools for white and colored children.

In 1928 there were 7,047 public elementary and secondary schools. There were 676,421 pupils and 17,448 teachers. For higher education there were 5 public normal schools, with 172 teachers and 6,824 pupils, and 26 universities and colleges. The total expenditure for education for elementary and secondary schools was $26,004,538. The principal colleges and universities being the State University at Knoxville; Vanderbilt and Fisk Universities and George Peabody College for Teachers at Nashville; University of the South at Sewanee; University of Chattanooga; Lincoln Memorial University at Harrogate; Union University at Jackson; and Cumberland University at Lebanon.

The judicial department of Tennessee consists of a Supreme Court in which five judges sit, elected for eight years, Circuit Courts and other inferior courts, the judges of which are elected from their respective districts for eight years.

State hospitals for the insane are maintained at Nashville, Knoxville and Bolivar. At Knoxville is a school for the deaf and dumb, while a school for the blind and the state industrial school are at Nashville. The state prison and Confederate soldiers' home are also at Nashville.

The chief cities are Nashville, the capital; Memphis, Knoxville, Chattanooga, Jackson, Clarksville, Columbia, Johnson City and Bristol.

The governor is elected for a term of two years and receives a salary of $4,000 per annum. Legislative sessions are held biennially and are limited in length to 75 days each. The Legislature has 33 members in the Senate and 99 in the House, each of whom receives $4.00 per day and mileage. There are 10 Representatives in Congress.

In 1756 a settlement was formed near Knoxville, then a part of North Carolina; Nashville was settled near

the close of the Revolution; in 1790 Tennessee was organized as a territory with Kentucky; and admitted in 1796 to the Union as a separate State. In January, 1861, a proposition to secede from the Union was defeated; but in June, carried by a majority of 57,567. In 10 months the State raised 50 regiments for the Southern Confederacy; while 5 or 6 were also recruited for the Union. The State was the scene, at Knoxville and Chattanooga, of some of the most important operations of the war. For years after the general pacification of the country, local disorders continued in Tennessee to disturb the tranquillity of the community, and it was only in 1870 that, after the adoption of the 15th amendment to the Constitution of the United States, and of a new State constitution, Tennessee was readmitted to representation in Congress.

Tennessee, Society of the Army of the, the second society composed of soldiers organized during the Civil War. The preliminary meeting for the formation of the society was held in the Senate Chamber at the State capitol, Raleigh, N. C., April 14, 1865. Membership in the society was restricted to officers who had served with the Old Army of the Tennessee.

Tennessee, University of, a co-educational non-sectarian institution in Knoxville, Tenn.; founded in 1794.

Tenney, Edward Payson, an American author; born in Concord, N. H., Sept. 29, 1835; studied at Dartmouth College in 1854–1855, and was graduated at Bangor Seminary in 1858. He was for many years the pastor of the Congregational Church in Easton, Mass.; for a short time editor of the "Pacific" in San Francisco, and the "Congregational Review" in Boston; and president of Colorado College in 1876–1884.

Tenney, Mrs. Sarah (Brownson), an American novelist; born in Chelsea, Mass., June 7, 1839. She was a daughter of Orestes A. Brownson. She died Oct. 30, 1876.

Tennis, a game played with small hard balls in a specially constructed court by two opponents who keep the ball continually in motion by striking it with a racket. Tennis is supposed, from the terms still used in the game, to have originated in France prior to the 15th century. It became very fashionable in England during Charles II.'s reign.

Tennis, Lawn, an out-door game played with balls, which are of hollow rubber, covered with smooth white cloth, cemented to the ball, on a piece of smooth, level sward. It remotely resembles tennis. The modern game of lawn tennis was originated by Major Wingfield in Wales in 1874, and introduced into the United States the same year by F. R. Sears and James Dwight.

Tennyson, Alfred, Lord, an English poet; born in Somersby, England, Aug. 6, 1809. He attended Trinity College, Cambridge, where in 1829 he won the chancellor's medal by a poem in blank verse entitled "Timbuctoo." His literary career may be said to date from 1830, when he published a volume entitled "Poems, chiefly Lyrical." It was not received with any great favor by the public. Its success was sufficient to encourage the poet to prepare a second collection, which appeared in 1833, and contained such poems as "A Dream of Fair Women," "Œnone," and others. It was not till 1842 that he again appealed to the public with a selection of his poems in two volumes. His reputation was more than sustained by the works that immediately followed. He received the laureateship (1850) upon the death of Wordsworth. Thereafter hardly a year passed without his adding some gem to our language. In 1855 the University of Oxford conferred on Tennyson the honorary degree of D. C. L. Among his later compositions are the dramas, "Queen Mary" (1875); "Harold" (1876), and "The Cup." The latter was successfully produced by Mr. Irving at the Lyceum Theater in 1881, as had also been "Queen Mary." "The Falcon," another drama, was produced by Mr. and Mrs. Kendal in 1882, and "The Promise of May" was brought out at the Globe Theater the same year. Tennyson was raised to the peerage in 1884 as Baron Tennyson of Aldworth, Sussex, and Freshwater, Isle of Wight. He died in Aldworth, England, Oct. 6, 1892, and was buried in Westminster Abbey.

Tenon, or **Tennon,** in carpentry, the projecting end of a piece of timber fitted for insertion into a mortise, formed by cutting away a portion on one or more sides; sometimes made cylindrical.

Tenor, in music, the third of the four kinds of voices arranged with regard to their compass. It is the highest of the male chest voices, and its extent lies between tenor C and treble A. The third of the four parts in which concerted or harmonized music for mixed voices is usually composed; the part above the bass. One who possesses a tenor voice. An instrument which plays a tenor part.

Tenos, or **Tinos,** an island in the Grecian Archipelago, one o the Cyclades, immediately south-east of Andros; area, about 85 square miles. It produces barley, silk, wine, figs, oranges, and honey. There is a town of the same name near the south coast. Pop. of island, 11,022; of town, 2,028.



THE TENREC.

Tenrec, in zoölogy, a genus of Insectivora, represented by one species, which is restricted to Madagascar, Bourbon, and Mauritius. It is the largest known insectivore, measuring from 12 to 16 inches in length; and it is probably the most prolific of mammals, since as many as 21 young are said to have been brought forth at a birth. It feeds chiefly on earthworms, and is said to become dormant during the hottest part of the year.

Tent, a portable pavilion or lodge, consisting of some flexible material, such as skins, matting, canvas, or other strong textile fabric, stretched over and supported on poles. Among uncivilized and wandering tribes tents have been ordinary dwelling places from the earliest times, but among civilized nations they are principally used as temporary lodgings for soldiers when engaged in the field, for travelers on an expedition, or for providing accommodation, refreshment, etc., for large bodies of people collected together out of doors on some special occasion.

The tent is the one human habitation which seems never to have changed in form. Nineveh sculptures show the tent of King Sennacherib, which was supported by ropes just like a modern tent. The Roman soldiers had the tent proper, but they also had huts of branches, hides, straw, etc., not unlike the temporary dwellings of our soldiers when they stopped for more than a few hours at one place in the late Civil War. The Indian tent of buffalo hide was familiar to every frontiersman and soldier on the plains, but it has disappeared with the buffalo, and with the altered conditions of frontier life.

Tentacle, in zoölogy, an elongated appendage proceeding from the head or cephalic extremity of many of the lower animals, and used as an instrument of exploration and prehension.

Tenure, the act, manner, or right of holding property, especially real estate. Land may be held according to two main principles, feudal or allodial. The former is the principle universal in England. In the United States the title to land is essentially allodial, and every tenant in fee-simple has an absolute and perfect title.

Tenure of land in American cities and vicinity is often subject, however, to restrictions, such as perpetual prohibition of the use of land for certain purposes judged by the former owner to be injurious, such as the sale of liquor, etc.

Tenure-of-office Act, in the United States, a bill passed by Congress in February, 1867, limiting the powers of the President in removals from office. Among other things, it took from the President the power to remove members of his cabinet excepting by permission of the Senate, declaring that they should hold office "for and during the term of the President by whom they may have been ap-

pointed, and for one month thereafter, subject to removal by and with the consent of the Senate." President Johnson vetoed this bill, but it was passed over his veto and became a law.

Tenures of Land. Nearly all the real property of England is supposed to have been granted by a superior lord, and to be held from him in consideration of certain services to be rendered to him by the tenant.

Teocalli (House of God), the name given by the ancient Mexicans to their places of worship. They were built in the form of four-sided pyramids, consisting of two, three or more stories, or terraces, with the temple proper on a platform on the summit. These temples were the scenes of the horrible human sacrifices which were the principal feature of Aztec worship, and accompanied by cannibalism, the remains of the victims being divided among the worshippers, and taken home to be cooked as food. Wars were carried on for the sole object of obtaining victims for the sanguinary rites of the "teocalli," and thousands were being sacrified yearly when the arrival of the Spaniards put an end to the practice. Some of these temples still exist, the most celebrated being the pyramid of Cholula, measuring 1,440 feet each way, and 177 feet in height.

Tephrine, or **Tephrite,** a name originally given to a gray, ashlike rock of loose texture, the base of which was trachytic. Subsequent investigation has shown, however, that it consists of a plagioclase felspar, associated with either nepheline or leucite, and sometimes with both, and also several accessory minerals.

Teraphim, a Hebrew plural word, occurring in the Old Testament, and supposed to designate certain household images. How far these images were objects of reverence does not seem to be clear. They may have been honored only for their associations, and because handed down from father to son, and probably this was the case with the better-informed and more intelligent class, and, on the other hand, this perfectly proper and natural attachment may have given place to idolatrous worship among those who were inclined to the practices of neighboring peoples. The veneration shown the teraphim appears to have been regarded as an abuse by some of the more devout worshippers of Jehovah, and was dealt with at times accordingly.

Terburg, or **Terborch, Gerard,** a Dutch portrait and genre painter, born at Zwolle, near Overyssel, about 1617. His father, a historical painter, gave him his first lessons in painting. He continued his studies at Haarlem, and afterwards visited Germany, Italy, Spain, England, and France. On the meeting of the peace congress at Munster in 1646 he painted the assembled plenipotentiaries, which is now in the National Gallery, London. He subsequently visited Madrid, London, and Paris, whence he returned to Overyssel, married, and became burgomaster of Deventer, dying in 1681. His portraits and pictures of social life are remarkable for elegance. He excelled in painting textile fabrics.

Terce, one of the two legal life rents in the law of Scotland, being a real right constituted without covenant, or sasine. By it a widow, who has not accepted any special provision, is entitled to the life rent of one-third of her husband's heritable (real) estate, provided the marriage has lasted for a year and a day, or has produced a living child. If special provision is granted by a husband to his wife by any antenuptial or postnuptial contract or other deed, the wife shall be thereby excluded from her terce, unless the contrary be provided in the same deed. The life rent bears its proportion of burdens affecting the estate. The mansion house, if there be only one, feu duties, rights of reversion, superiority, and patronage, are not subject to the right of terce.

Terceira, an island of the Atlantic, one of the Azores; greatest length, 20 miles; average breadth, 13 miles; area, 223 square miles. The soil possesses great natural fertility, and heavy crops of grain, pulse, etc., and abundance of oranges, lemons, and other fruits are produced. The capital is Angra. Pop. (1926 Est.) 52,100.

Terebratula, a genus of deep-sea brachiopod bivalve mollusks found moored to rocks, shells, etc. One of

the valves is perforated to permit the passage of a fleshy peduncle, by means of which the animal attaches itself. There are few living species, but the fossil ones are numerous, and are found most abundantly in the secondary and tertiary formations.

Teredo, in botany, any disease in plants produced by the boring of insects. In zoölogy and palæontology, a genus of worm-like mollusks, including the teredo or shipworm, which bores into timber, and is exceedingly destructive to ships. In 1731 and 1732 it created alarm in Holland by boring into the piles constituting part of the defense of the country against the inroads of the sea. Though teak is not so easily attacked as many other kinds of timber, yet it does not wholly escape. The best protection against the teredo is metal sheathing and broad headed iron nails hammered into the wood. Fossil species 24, from the Lias onward. Used also of any individual of the genus.

Terentius Afer, Publius (more commonly Terence), a Roman poet; born in Carthage, 185 B. C. Following immediately after Cæcilius, the most popular representative of Roman comedy after Plautus, he was the last of the comic dramatists of Rome of whom we have anything remaining. He was either taken prisoner in war or sold in the slave market. His purchaser, or at all events the Roman into whose hands he fell, was a senator, Lucanus Terentius. On obtaining his freedom he took his patron's name. A liberal education followed, and we soon find him the friend and associate of the great and noble. He was gifted with dramatic genius. Terence was beyond question the chief dramatist of his time. He used the Latin tongue with singular grace and elegance. Critics have denied to him the possession of lively humor. Ancients and moderns are agreed that, though a freedman and a foreigner, he divides with Cæsar and Cicero the palm of pure Latinity. Terence was the interpreter of Menander; but he was more than a mere translator. His six comedies that remain belong to the "Fabula Palliata." It is said that Terence went to Greece and translated 108 of Menander's plays. Whether he was lost on his homeward voyage, as some say, or lost his transcripts and died of grief in consequence, we have no means of deciding. He died in his 26th year, 159 B. C. He owned an estate of 20 jugera contiguous to the Appian Way, and after his death his only daughter married a Roman knight.

Teresa, or **Theresa, St.,** a saint of the modern Roman calendar; born in Avila, Old Castile, Spain, March 28, 1515. She inaugurated notable reforms in the Carmelite order with a result that the influence of that association was greatly increased and extended. She died at Alba, Oct. 4, 1582, and was canonized by Gregory XV. in 1622.

Terhune, Albert Payson, an American journalist; born in Newark, N. J., Dec. 21, 1868; was graduated at Columbia University in 1893; and after traveling through Syria, where he investigated the leper settlements and lived among the Bedouins of the desert, returned to New York and joined the editorial staff of the New York "World."

Terhune, Mary Virginia, an American author; born in Amelia co., Va., Dec. 21, 1831; received an academic education, and early began to write for the press. She contributed extensively to numerous magazines; was for several years the editor of "Babyhood" and "The Home Maker"; conducted departments in "Wide Awake" and "St. Nicholas"; and served on the editorial staff of the Chicago "Daily News." Died, 1922.

Term, a limit. The limitation of an estate; or, rather, the whole time or duration of the holding of an estate. The time in which a court is held or open for the trial of causes. The time during which instruction is regularly given to students in universities and colleges. A word or expression; the word by which a thing is expressed; that which fixes or determines ideas; a word or expression that denotes something peculiar to an art. The subject or predicate of a proposition in logic. In algebra, a member of a compound quantity. In the plural, conditions; propositions stated or promises made, which, when assented to or accepted by another,

settle the contract and bind both of the parties.

Termagant, the name of one of the idols whom the Saracens are represented in mediæval romances as worshiping. He was afterward introduced into the old Moralities as a person of violent temper, so that a ranting actor might appear to advantage in that character. The word, in common usage, means a turbulent, brawling, scolding or abusive person.

Terminalia, in Roman antiquities, a festival celebrated annually on Feb. 23, in honor of Terminus, the god of boundaries. It was then usual for peasants to assemble near the principal landmarks which separated their fields, and, after they had crowned them with garlands and flowers, to make libations of milk and wine, and to sacrifice a lamb or a young pig. The public festival was celebrated at the sixth milestone on the road to Laurentum, because at one time that was the limit of Roman territory.

In botany (as a pseudo-singular), the typical genus of Terminaleæ. Trees and shrubs from the tropics of America and Asia. T. chebula is a large and valuable tree, 80 to 100 feet high, growing in India and Burma. The fruit is ellipsoid or obovoid and five-ribbed, from three-quarters of an inch to an inch and a quarter in length. The pounded rind gives the black myrobalan. The bark of the tree is used for tanning and dyeing. There are often galls on it, which are also used for dyeing. Another of the Myrobalans is T. belerica, 60 or 80 feet high. It grows in India. The leaves and the fruit are used for tanning and dyeing.

Terminism, in Church history, the belief that there is a terminus in each man's life, after which he is no longer capable of receiving grace or pardon for his sins.

Terminus, in mythology, a divinity among the Romans supposed to preside over boundaries, frontiers, and landmarks. He was represented with a human head and neck, placed on a plinth, or column, and being destitute of legs or arms.

Tern, in ornithology, the popular name of any species of the genus Sterna. They are slenderly built birds, with long, narrow, sharp-pointed wings, and forked tail, from which, as well as from their swift and circling manner of flight, they are often called sea swallows. They are extensively distributed, inhabiting every zone, but prefer warm and temperate climates to the colder regions, which they only visit for a short period during the year. All are exceedingly active, and from sunrise to sunset are on the wing, generally flying very near the surface of the water, rising and sinking as the waves heave and fall. They walk badly and are not good swimmers, their small feet rendering them but little assistance, so that they are tossed about like corks. They feed on small fish and marine animals, always taking their prey on the wing.

Terpodion, in music, a keyed instrument invented by John David Buschmann, of Hamburg, about 1816, resembling a pianoforte in appearance but producing notes from blocks of wood struck with hammers. The sound could be increased or diminished at pleasure.

Terpsichore, in classical antiquities, one of the muses, daughter of Jupiter and Mnemosyne. She presided over dancing, of which she was reckoned the inventress, and in which, as her name intimates, she took delight. She is represented as a young virgin crowned with laurel, and holding in her hands a musical instrument.

Terrace, a raised level space or platform of earth, supported on one or more sides by masonry, a bank or platform of turf or the like. In physical geography and geology, a platform, often of soft material, flat above, and more or less steep on the sides.

Terra-Cotta, an Italian term for pottery or earthenware. The name is not ordinarily applied to pottery vessels with thin walls, but is confined to statues, statuettes, bas-reliefs, and architectural members such as columns, and the like made of burnt clay. But the term is not necessarily confined to articles of a decorative character. The color of terra-cotta is either buff, yellow, or red, the former being the more common. Many masterpieces of ancient Greek and Roman sculpture are executed in this mate-

rial, and a considerable number of works in burnt clay, by Italian artists who lived in the Middle Ages and early Renaissance periods, are also exquisite productions. Architectural ornaments of a very effective kind were also executed in this material in ancient times. Distinguished modern sculptors sometimes produce works in terra-cotta, and for the last 30 or 40 years it has been increasingly employed, either partly or wholly, for the fronts and other portions of important buildings. Ornamental terra-cotta work reached its highest production in the United States in 1907, when the total output was valued at $6,026,977. New Jersey led among 12 producing States, with New York second and California third.

Terre Haute, city and capital of Vigo county, Ind.; on the Wabash river and the Chicago & Eastern Illinois and other railroads; 73 miles S. W. of Indianapolis; is one of the most important commercial and manufacturing centers of the State; had in 1925 an output of production valued at $22,846,355, and in 1916 an assessed property valuation of $37,288,370; is in a fine farming region, with block and bituminous coal, fireclay, and petroleum; breeds fine horses; and is the seat of the Rose Polytechnic Institute, State Normal School, Coates Female College, Union Home for Invalids, Rose Dispensary, Rose Orphan Home and several hospitals. Pop. (1930) 62,810.

Terrell, Edwin Holland, an American diplomatist; born in Brookville, Ind., Nov. 21, 1848; was graduated at De Pauw University in 1871; studied in Europe in 1873–1874; and practised law in Indianapolis in 1874–1877. He was a delegate to the Republican National Conventions from Texas in 1880 and 1888; United States minister to Belgium in 1889-1893; conducted the negotiations for the United States with the six powers holding possessions in the Kongo basin and secured from them the "Protocol" of Dec. 22, 1890, granting the United States and its citizens full commercial privileges, etc. He was minister plenipotentiary to negotiate a commercial treaty with the Kongo Free State in 1891; commissioner to and vice-president of the International Monetary Conference at Brussels in 1892. He died July 3, 1910.

Terrier, a name originally applied to any breed of dog used to burrow underground, but now applied to any small dog. Terriers may be divided into three classes; those able to follow their game into its earth, those kept for hunting above-ground, and those kept merely as companions. Among terriers proper the fox terrier holds the position of greatest popularity. The Scotch terrier, though long familiar in Scotland, only became generally known about 1870, but is spreading so rapidly that it threatens even the popularity of the fox terrier. The third variety used for going to ground is the Dandie Dinmont. The Dandie is a low and powerful dog, very courageous, a quality probably gained by an admixture of bulldog blood, but headstrong and difficult to keep under control.

Among terriers kept for hunting above ground the most popular is the Irish terrier. The coat is like the Scotch terrier's, but a light red in color. The ears used always to be cut to a fine point, standing erect, but are now allowed to fall over in their natural shape. Among terriers kept as companions the Skye is probably the most common. The black-and-tan terrier, though a breed of great antiquity, is fast being supplanted by the white English terrier. Both breeds are identical in shape and resemble a light and elegant bull terrier. The toy terrier is a cross from the black-and-tan, as is the Yorkshire terrier. Both varieties are fit only for house dogs and are not true terriers.

Territory, a term applied in the United States to an area similar to a State of the Union, but not having the independent position of one. The unorganized Territories are under the direct control of Congress. Each organized Territory has a governor, appointed by the President, for four years and ratified by the Senate. The Legislature, officially known as the Legislative Assembly, is composed of a council and a house of representatives, chosen every two years by the people. A delegate to Congress is elected for the same term. He has the right of debate, but not a vote in the House. Territorial courts are

provided for, the judges of which are appointed by the President for four years, and confirmed by the Senate, and over which the Supreme Court of the United States has appellate jurisdiction.

Terror, Reign of, the term usually applied to the period of the French revolutionary government from the appointment of the revolutionary tribunal and the committee of public safety (April 6, 1793) to the fall of Robespierre (July 27, 1794).

Terror, The, one of the vessels which accompanied the ill-fated Arctic exploring expedition under Sir John Franklin in 1845. From documents found on King William's Land by Captain McClintock, it is known that Franklin died in 1847, and that the ships "Erebus" and "Terror" were deserted by the remainder of the explorers who started for the Great Fish River. They all perished and their remains were found by Lieutenant Schwatka, in his expedition of 1879-1880; no traces of the vessels were ever found.

Terry, Alfred Howe, an American military officer; born in Hartford, Conn., Nov. 10, 1827; studied law at Yale College and began its practice in 1848. From 1854 to 1860 he was clerk of the Superior and Supreme Courts of Connecticut. At the outbreak of the Civil War he was colonel of a regiment of militia, was made a Major-General of volunteers, and Brigadier-General in the regular army. In March, 1865, he was placed in command of the 10th Corps, and in June, of the Department of Virginia. From 1869 to 1872 he was at the head of the Department of the South, and after 1872 had charge of various divisions and departments of the army. In March, 1886, he was promoted to the major-generalship, made vacant by the death of General Hancock, and in the following April took command of the Department of the Missouri. He retired in 1888, and died in New Haven, Conn., Dec. 16, 1890.

Terry, Ellen Alice, an English actress; born in Coventry, England, Feb. 27, 1848, and made her first appearance on the stage during Charles Kean's Shakespearian revivals in 1858. In 1864 she married and left the stage, but returned in 1867. She visited the U. S. with Mr. Irving on several tours. The jubilee of her appearance on the stage was celebrated in London, Apr. 27, 1906. Died July 21, 1928. at Small Hythe Kent, England.

Terry, Henry Taylor, an American Lawyer; born in Hartford, Conn., Sept. 19, 1847; was graduated at Yale College in 1869, and admitted to the Connecticut bar in 1872. In 1878 he became Professor of Law at the Imperial University of Tokyo, Japan, but returned to the United States in 1884, and began the practice of his profession in New York City. In 1894–1912 he resumed his chair in the Imperial University.

Terry, Milton Spenser, an American educator; born in Coeymans, N. Y., Feb. 22, 1840; was graduated at Troy University and the Yale Divinity School; held pastorates in various Methodist Episcopal churches in New York City in 1863–1884; and in 1885 was made Professor of Christian Doctrines in the Garret Biblical Institute. He died July 13, 1914.

Terry, Silas Wright, an American naval officer; born in Kentucky, Dec. 28, 1842; was appointed to the navy in 1858. At the outbreak of the Civil War he was assigned to the "Dale" in the Atlantic Coast Blockading Squadron, in which he served till 1863, when he was transferred to the "Black Hawk" of the Mississippi Squadron. Soon afterward he was placed in commad of the transport "Benefit" to carry dispatches and supplies to Admiral Porter; to whose staff he was appointed and under whom he served till the close of the war. Afterward he cruised on the "Ticonderoga" in European waters; was executive officer on the flagships "Severn" and "Worcester"; inspector of the Maryland Lighthouse District; and commanded the "Marion," attached to the South Atlantic Squadron. In 1887 he went to Washington, D. C., where he was engaged on board duty till 1892. He was promoted captain in 1893, and during the Spanish-American War commanded the receiving ship "Franklin." He became commandant of the Washington navy yard and rear-admiral in 1900; retired 1904; died Feb. 9, 1911.

Tertiaries, a name given by Church writers to a class in the Roman Catholic Church, who, without entering into the seclusion of a monastery, aspire to practise in ordinary life all the substantial obligations of the scheme of virtue laid down in the Gospel.

Tertiary, a color, as citrine, russet, or olive, produced by the mixture of the two secondary colors. In geology, the third leading division of fossiliferous sedimentary rocks; called also the Cainozoic or Kainozoic. The succession and importance of the Primary (Palæozoic) and the Secondary (Mesozoic) rocks were understood before the nature and extent of the Tertiary were recognized, these last strata being confounded with the superficial alluviums. They were observed to occur in patches (some of fresh-water and others of marine origin) in small areas or basins in the Secondary rocks, suggesting the idea that they had been deposited in bays, lakes, estuaries, or inland seas, after a great part of what is now Europe had been converted into dry land.

Tertullianus, Quintus Septimius Florens (more commonly, Tertullian), a theologian of the Western Church; born of heathen parents in Carthage about 160. He did not become a Christian till about 190, and he has not recorded the history of his conversion. That he was married is shown by his two books "To the Wife," in which he argues against second marriages. Some time between 199 and 203 his opposition to the spirit of worldliness in the Church culminated in his becoming a leader of the Montanist sect. He died between 220 and 240, "in decrepit old age."

Tesla, Nikola, an American electrical inventor; born in Smiljan, Austria-Hungary in 1857; studied engineering in Paris; and in 1884 came to the United States, and for several years was employed at Edison's laboratory, near Orange, N. J. He then opened a laboratory of his own. In 1888 he completed his discovery of the rotating magnetic fluid by the invention of the rotary field-motor, the multi-phase system of which is used in the 50,000 horse-power plant built to transmit the water power of Niagara Falls to Buffalo and other cities. He invented many methods and appliances for the use of electricity, among them the production of efficient light from lamps without filaments, and the production and transmission of power and intelligence without wires. In November, 1898, Tesla announced the discovery of, and on May 1, 1900, patented, a method of transmitting electrical energy without wires. Working along the same line William Marconi invented his wireless-telegraphy. In 1901 Tesla discovered that the capacity of the electrical conductor is variable.

Test Act, in English history, an act passed in 1563 by which an oath of allegiance to Queen Elizabeth, and of abjuration of the temporal authority of the Pope, was exacted of all holders of office, lay or spiritual, within the realm, except peers.

Testing, the process of examining various substances by means of chemical reagents, with the view of discovering their composition.

Testing Clause, in Scotch law, the clause in a formal written deed or instrument by which it is authenticated according to the form of law. It consists essentially of the name and designation of the writer, the number of pages of which the deed consists, the names and designations of the witnesses, the name and designation of the person who penned the deed, and the date and place of signing.

Testing Machines, machines used for the accurate testing of iron, steel and other materials used in constructive work. The problem which these machines are intended to solve is the adjustment with certainty of a safe margin of strength with a minimum of weight, which can be determined only by experimental tests on full sized sections of the materials used in the construction. One method is to use machines designed to test small sample pieces under such conditions that the breaking strength of the test-piece is measured by the machine, and from the figures thus obtained is calculated the strength per square inch of the full-sized constructive material.

Test Oath, an oath prescribed by the United States Congress July 2,

1862, to be taken by persons in the former Confederate States appointed to office under the National government.

Test Papers, in chemistry, are made by dipping unsized paper into an alcoholic solution of a vegetable coloring matter which changes color when exposed to the action of an acid or alkaline solution.

Testudinidæ, the land tortoises; very widely distributed in both hemispheres, but absent from Australia. They are vegetable feeders, and the greater part of the species belong to the type genus Testudo. In some classifications the family includes the fresh-water tortoises; now generally made a separate family.

Testudo, in Roman antiquity, a cover or screen used in assaults on fortified towns. In cases where the town was of small size and accessible on every side, while the force at the disposal of the besiegers was large, a ring of soldiers was drawn round the walls, a portion of whom kept up a constant discharge of missiles on those who manned the battlements, while the rest, advancing on every side simultaneously, with their shields joined above their heads so as to form a continuous covering like the shell of a tortoise, planted scaling ladders against a number of different points, and, at the same time, endeavored to burst open the gates.

Tetanus, stiffness or spasm of the neck; a disease common to mankind and animals. It is characterized by the contraction of a greater or less number of muscles by paroxysmal spasms, which aggravate the contractions, and by troubles more or less accentuated in the calorification of the circulation and respiration. It is most commonly located in the jaw and begins with painful stiffness at the maxillary muscles and the muscles at the nape of the neck or by difficulty in swallowing. The progress of tetanus is either acute or chronic. The acute form develops in from one to four days; the chronic form may last a fortnight. In acute tetanus the average number of deaths ranges from 65 to 80 per cent.

Tethys, in Greek mythology, the greatest of the sea deities, wife of Oceanus, daughter of Uranus and Terra, and mother of the chief rivers of the universe, Nile, Peneus, Simois, Scamander, etc., and about 3,000 daughters called Oceanides. The name Tethys is said to signify nurse. In astronomy, a satellite of Saturn. In zoölogy, a genus of Tritoniidæ, with one species, from the Mediterranean. It attains a foot in length, and feeds on other mollusks and on small crustacea.

Tetrachordon, in music, an instrument similar in appearance to a cottage pianoforte, and like it played by finger-board, but the tone, instead of being produced by striking, is obtained by means of a cylinder of india-rubber charged with resin, kept in motion by a pedal, variety of tone being gained by the depth of pressure on the keys by the fingers. It is called the tetrachordon from an idea that its sounds are similar to those produced by a string quartet.

Tetragonurus, a rare fish, more frequently met with in the Mediterranean than in the Atlantic. Nothing is known of its habits, but as, when young, it accompanies the Medusæ, it must be regarded as a pelagic form. At a later period of its existence, it probably descends to greater depths, coming to the surface only at night. It attains a length of about 18 inches.

Tetrarch ("governor of the fourth part"), a title originally designating what is signified by its etymology, the governor of one of four divisions of a kingdom or country; but in the usage of the later Roman empire given undistinguishingly to all minor rulers, especially in the East, possessing sovereign right within their territory, but dependent on the emperor, and in many cases removable at his pleasure. This was especially the case in Syria, where the princes of the family of Herod are called indiscriminately by this title and by that of king.

Teutones, or Teutons, in antiquity, a powerful German tribe, which, in alliance with the Cimbri, advanced into Illyria, and defeated the consul Cn. Papirius Carbo, at Noreia 113 B. C. They afterward forced their way into Roman Gaul, and defeated Manlius and Scipio 105 B. C.; and they invaded Spain 104 B. C. On their re-

treat from Spain, they were met by the Romans, under Marius, at Aquæ Sextiæ, the modern Aix, and totally defeated, 102 B. C.

Teutonic Knights, one of the three military-religious orders of knighthood rounded during the period of the Crusades. There had been a German hospital in Jerusalem from 1128 to 1187, and the new arrangement at Acre was in some sort a continuance of this, being called the Hospital St. Mary of the Germans in Jerusalem. The new hospital, the attendants and founders of which formed themselves into a monastic order with the same rules as the Knights Hospitallers of St. John, found a patron in Duke Frederick of Swabia, and through him secured the countenance of his brother, the Emperor Henry VI., and the confirmation of the Pope (1191). Seven years later it was converted into a knightly or military order; and the change was stamped with the papal approval in 1199. The knights, in addition to the usual monastic vows, bound themselves to tend the sick and wounded, and wage incessant war on the heathen. Their distinguishing habiliment was a white mantle with a black cross. The chief officer of the order was the grand-master or "high-master," who was assisted by five other dignitaries. The chapter consisted of these six officers in conjunction with the provincial masters. The minor districts and individual castles were governed by commanders, who constituted also the respective provincial councils. There was, moreover, a class of "serving brothers," who performed menial offices about the hospitals; and to these were added in certain places a class of inferior female domestics called "half-sisters."

About the year 1225 the Duke of Masovia (in Poland) invited the Teutonic Knights to help him against the heathen Prussians. The grand-master, Hermann von Salza, sent a body of knights, who experienced little difficulty in establishing themselves in the territories of the heathen. Twelve years later they were strengthened by the absorption into their order of the Brethren of the Sword, a military order which had been formed to convert to Christianity with the sword the Livonians, Esthonians, and Courlanders. The successive encroachments of the knights roused the Prussians to bitter opposition. A fierce warfare was carried on for nearly a quarter of a century; but by 1283 the knights were masters of the territory lying between the Vistula and the Memel, and as heirs of the extinct Brethren of the Sword they had also extensive possessions in Livonia and Courland. In 1309 the executive officers of the order established themselves in the great castle of Marienburg, near the Vistula. After subduing the Prussians, the order entered on a hundred years' contest against the Lithuanians. But a most serious blow was struck at the knights by the conversion of the Lithuanians to Christianity and the accession (1386) of their prince to the throne of Poland.

From this time the order began to decline. In 1525 the order was secularized; its grand-master, Albert of Brandenburg-Anspach, being created hereditary Duke of Prussia under the suzerainty of Poland. The headquarters of the order was fixed at Mergentheim in Swabia, and its possessions were reorganized in 12 bailiwicks. Thus it existed till 1801, when the estates W. of the Rhine were annexed by France; in 1809 the order was entirely suppressed by Napoleon in all the German States. This left only a couple of bailiwicks in Austria and one at Utrecht; and these still exist, severely aristocratic in both countries. The Austrian branch, reorganized in 1840, justifies its existence by maintaining an organization for the care of the wounded in war.

Teutonic Peoples, a term now applied: (1) to the High Germans, including the German inhabitants of Upper and Middle Germany and those of Switzerland and Austria. (2) The Low Germans, including the Frisians, the Plattdeutsch, the Dutch, the Flemings, and the English descended from the Saxons, Angles, etc., who settled in Britain. (3) The Scandinavians, including the Norwegians, Swedes, Danes and Icelanders.

Tewfik Pasha, Khedive of Egypt; born Nov. 15, 1852; eldest son of Ismail Pasha; succeeded on his father's abdication in 1879, in virtue of the arrangement of 1866 between Ismail

and the Sultan. The chief events of his reign were the insurrection of Arabi, the war with the Mahdi, the pacification of the Sudan frontiers, and the steady improvement of the condition of Egypt under English administration. He died Jan. 7, 1892.

Tewkesbury, an old market town of Gloucestershire, England. On the site of the cell of the hermit Theoc, from whom the place received its name, was founded in 715 a monastery, refounded in 1102 as a great Benedictine abbey. Its noble church, consecrated in November, 1123, measures 317 feet by 124 feet across the transepts, and remains essentially Norman, in spite of later additions — Early English, Decorated, and Perpendicular. It was restored in 1875–1879. Within half a mile was fought (May 4, 1471) the famous battle of Tewkesbury, in which the Yorkists under Edward IV. gained a crowning victory over the Lancastrians.

Texas, a State in the South Central Division of the North American Union; admitted to the Union Dec. 29, 1845; capital, Austin; number counties 254: area 265,896 sq. mi.; pop. **(1920)** 4,663,228; (1930) 5,851,272.

The surface in the N. W. is covered with mountains, which, in proceeding S. E., subside into hills and undulating plateaus, succeeded on approaching the Gulf of Mexico by low alluvial plains. These extend inland from 20 to 80 miles, are furrowed with deep ravines, and consist for the most part of rich prairie or forest land. The hilly region behind this is formed chiefly of sandstone and limestone ridges, separated by valleys of considerable fertility. In the mountainous region many of the summits are lofty, and covered with snow several months of the year. The general slope of the country gives all the rivers a more or less southerly direction. The Rio Grande, rising in Colorado, forms the W. and S. W. boundary of the State, from the 32d parallel to the sea. The Red river, which has its source in the Staked Plain, forms the greater part of the N. boundary. The other important rivers are the Colorado, the Brazos, the San Jacinto and Trinity, and the Sabine, which, during the greater part of its course, is the boundary between Texas and Louisiana.

Petroleum is the most valuable mineral product, the output in the year 1928 being 256,888,000 barrels.

There were also produced 301,490,000,000 cu. ft. of natural gas, 895,000 long tons of coal, 1,053,000 fine ounces of silver, 2,000,000 tons of sulphur and quicksilver valued at $171,607. The total value of the mineral production for 1928 was $378,617,000.

The soil of Texas is, as a whole, extremely fertile. The two staple products are cotton and maize, both of which are largely cultivated in the lower or coast region, while the sugar cane and tobacco also grow luxuriantly; wheat, rye, oats, and barley thrive best in the black land prairie regions; and both there and at lower levels fruits in almost endless variety are abundant.

The value of all farm property was estimated in 1925 to be $3,471,867,466, representing 465,642 farms having 2,950,488 acres of irrigable land. The chief crops in 1929 were: cotton, 3,950,000 bales; corn, 86,127,000 bus.; wheat, 37,800,000 bus.; grain sorghums, 46,920,000 bus.; oats, 24,019,000 bus.; hay, 990,000 tons; rice, 7,524,000 bus.

On Jan. 1, 1930, the State reported 5,677,000 cattle, 5,550,000 sheep, 1,028,000 swine, 1,011,000 mules, 974,000 milch cows, 682,000 horses. The wool clip for the year of 1929 was 41,300,000 pounds.

In 1927 it was reported that there were 4,065 manufacturing plants employing 116,763 wage earners, and paying $130,409,000 for wages and $842,927,000 for raw materials and yielding products having a combined value of $1,206,580,000. The principal industries according to the value of the output were the manufacture of lumber and timber, cotton-seed oil and cake flour and grist, railroad cars, ginned cotton, packed meat, saddlery and harness, foundry shop products, about one-fourth of the entire cotton-seed oil output of the United States is produced in Texas.

The imports for the year ending June 30, 1926, at the ports of Galveston, Sabine, Laredo, El Paso, and Eagle Pass aggregated $58,247,000; and the exports for the same period were $744,963,000.

Texas maintains separate schools for white and colored pupils. In 1928 the total showed 1,232,696 pupils at-

tending elementary schools with 39,906 teachers. The public high schools had 6,032 teachers and 147,425 pupils. There were also 8 teachers' colleges with 22,298 students, and numerous colleges, universities, and technical schools, the principal of which are the University of Texas at Austin, the State Agricultural and Mechanical College at College Station, the Texas Woman's College and Texas Christian University at Fort Worth, Baylor University at Waco; Rise Institute at Houston, and the College of Industrial Arts at Denton.

The largest religious bodies in the State were the Baptist, Methodist, Roman Catholic, Disciples of Christ, Presbyterian, and Episcopalian in the order stated. It was estimated in 1926 that there were over 12,000 religious organization, with approximately one and one-half million members.

The State Treasury reported finances for the year ending June 30, 1927, as follows: Total receipts $78,552,195; total disbursements, $706,639,072; debt, $4,364,488.

The present constitution was adopted in 1876. It provides for an executive department, legislature and judiciary.

The judiciary department consists of a Supreme Court of three judges elected for six years, eight courts of Civil Appeal of three judges each, one court of Criminal Appeal of three judgs and of Criminal Appeal of three judges and

Texas has an enviable position in the enforcement of laws safeguarding the interests of her citizens, those governing loans and forced sale of homesteads being of particular importance.

The Governor is elected for a term of two years and receives a salary of $4,000 per annum. Legislative sessions are held biennially and are limited to 90 days. The legislature in 1927 had 31 members in the Senate, who are elected for four years, one half of whom retire every two years. There were 150 members in the House of Representatives.

The first settlement in Texas was made at Matagorda by the French who in 1689 were massacred by the coast savages. It afterward in conjunction with Coahuila became one of the States of the Mexican Confederation. Several colonies of American citizens, invited by the Mexicans, settled in the central and E. section, and gradually increased in numbers. When Santa Ana overthrew the federal system Zacatecas rebelled but was soon subdued. Texas then revolted from the Mexican government, and in 1836 declared itself independent. Santa Ana attempted to reduce it, but failed, being himself beaten and taken prisoner at the battle of San Jacinto by General Houston. Texas now managed its own affairs as an independent republic till 1845, when it became one of the United States, and thus gave rise to the war which proved disastrous to Mexico. It joined the Confederates during the Civil War, and was the last to submit. It was under military control till 1870, when it was restored to the Union.

Texas, University of, a coeducational non-sectarian institution in Austin, Tex., with a medical department at Galveston. It was founded in 1876 and opened in 1883, upon a legislative grant of 2,000,000 acres of land. It has an endowment of over $2,000,000; average number of faculty, 196; average student attendance, 2,724; total income from all sources (1916) $963,932.

Texel, an island in the province of North Holland, 14 miles in length and 6 in its greatest breadth, situated at entrance of the Zuyder Zee; separated from North Holland by the narrow channel of Marsdiep. Pop. 6,300.

Texcoco, or **Tezcuco,** a town of Mexico, in the State of Mexico, on the eastern shore of the Lake of Texcuco. In ancient times it was the second city in the kingdom. Here are the remains of three pyramids, each measuring 400 feet along the base of their fronts. The modern town carries on an active trade. Pop. 5,000.

Textus Receptus, in Biblical criticism, a received text; one from which, as being the best accessible, translators made their version into the vernacular. The textus receptus of the Old Testament is the Hebrew text, from which the Authorized English Version of that portion of the Bible was made. The textus receptus of the New Testament is the Greek text,

from which the Authorized English Version was produced.

Thacher, John Boyd, an American reformer; born in Ballston, N. Y., Sept. 11, 1847; was graduated at Williams College in 1869; member of the New York Senate in 1884–1885, when he introduced the measures which resulted in the tenement house reforms; mayor of Albany, N. Y., in 1886–1887, 1896–1897; and chairman of the Bureau of Awards at the World's Columbian Exposition in Chicago in 1893. He died in 1909.

Thackeray, William Makepeace, an English novelist; born in Calcutta, India, July 18, 1811. Being well provided for he chose the profession of an artist. He spent several years in France, Germany, and Italy, staying at Weimar, Rome, and Paris, but gradually became convinced that art was not his vocation, and having lost his fortune, he resolved to turn his attention to literature. His first appearance in this sphere was as a journalist. In 1846–1848 his novel of "Vanity Fair" was published in monthly parts, with illustrations by himself; and long before its completion its author was unanimously placed in the first rank of British novelists. His next novel was the "History of Pendennis," completed in 1850. In 1851 he delivered a course of lectures in London on the "English Humorists of the 18th Century," which were repeated in Scotland and America, and published in 1853. In 1855–1856 he delivered a series of lectures in the United States—"The Four Georges," and afterward in England and Scotland. In 1859 he became editor of the "Cornhill Magazine," but he retired from that post in 1862. He died in Kensington Palace Gardens, London, Dec. 24, 1863.

Thalamephorus, or **Thalamephoros,** in Egyptian antiquities, a kneeling figure supporting a shrine or inscribed tablet. These statues probably represent priests and initiated women who carried about in processions the statues of the gods.

Thales, the earliest of the Greek philosophers, called the father of philosophy; born in Miletus 640 B. C. He was the founder of the Ionic school, one of the chief sources of Grecian philosophy. He visited Egypt for instruction in the sciences professed by the priesthood. Besides abstract philosophy, he studied geometry and astronomy. His biographers mention among his services to astronomy a calculation of the length of the year, and of the interval between solstices and equinoxes. He left nothing in writing. He died about 550.

Thalia, one of the nine Muses. She was the patron of comedy, and is usually represented with the comic mask, and the shepherd's crook in her hand. One of the Graces was also called Thalia.

Thames, the most important river of Great Britain; usually said to rise about 3 miles S. W. of Cirencester in Gloucestershire, near a bridge over the Thames and Severn canal, called Thameshead Bridge, but is more properly formed by the Isis, Churn, Colne, and Leach, which have their sources on the E. side of the Cotswold Hills, and unite near Lechlade. Its total course is estimated at 250 miles. Its tributaries include the Windrush, Cherwell, Thame, Colne, Brent, Lea, and Roding, on the left; the Kennet, Loddon, Wey, and Mole, on the right. Thameshead Bridge is 376 feet above sea-level; the junction of the Colne above Lechlade is 243 feet. At London Bridge the width of the river is 266 yards, at Woolwich 490 yards, at Gravesend 800 yards, and 3 miles below, 1,290 yards. The depth of the river in the fair way above Greenwich to London Bridge is 12 to 13 feet, while its tides have a mean range of 17 feet and an extreme rise of 22 feet. By means of numerous canals immediate access is given from its basin to those of all the great rivers of England.

Thane, a title of honor or dignity among the Anglo-Saxons. In England a freeman not noble was raised to the dignity of a thane by acquiring a certain amount of land, by making three sea voyages, or by receiving holy orders. The thanes had the right of voting in the Witenagemot, not only of their own shires, but also of the whole kingdom, on important questions. There were two orders of thanes: The king's thanes, or those who attended at his court and held lands immediately from him, and ordinary thanes, or lords of the manor,

and who had a particular jurisdiction within their limits. On the cessation of his actual personal service about the king, the thane received a grant of land. After the Norman conquest, thanes and barons were classed together, and the title fell into disuse in the reign of Henry II.

Thanet, Octave, pseudonym of Alice French, an American novelist; born in Andover, Mass., March 19, 1850.

Thanksgiving Day, in the United States, an annual festival of thanksgiving for the mercies of the closing year. Practically it is a National harvest festival, fixed by proclamation of the President and the governors of States, and ranks as a legal holiday. In 1789 the Episcopal Church formally recognized the civil government's authority to appoint such a feast, and in 1888 the Roman Catholic Church also decided to honor a festival which had long been nearly universally observed — though nowhere with such zest as in the New England States, where it ranks as the great annual family festival, taking the place which in England is accorded to Christmas. The earliest harvest thanksgiving in America was kept by the Pilgrim Fathers at Plymouth in 1621. Congress recommended days of thanksgiving annually during the Revolution, and in 1784 for the return of peace — as did President Madison in 1815. Washington appointed such a day in 1789 after the adoption of the Constitution, and in 1795 for the general benefits and welfare of the nation. Since 1863 the Presidents have always issued proclamations appointing the last Thursday in November as Thanksgiving Day.

Thaso, ancient Thasos, an island in the Ægean Sea, a few miles S. of the Macedonian coast, belonging to Turkey. It is of a circular form, about 16 miles in diameter, and is traversed by high woody hills. Pop. 12,000.

Thatcher, Henry Knox, an American naval officer; born in Thomaston, Me., May 26, 1806; entered the navy as midshipman in 1823; became lieutenant in 1833. He served in various parts of the world; and in 1855 attained the rank of commodore. He was in command of the sloop "Decatur" of the Pacific station; ordered to the sailing sloop "Constellation" on the Mediterranean station; and in 1862 commanded the first division of Commodore Porter's fleet in both attacks on Fort Fisher. After the war he commanded the Gulf Squadron till 1866 and the Pacific Squadron in 1866–1868; promoted rear-admiral in July, 1866; retired in 1868; and was port-admiral at Portsmouth, N. H., in 1869–1871. He died in Boston, Mass., April 5, 1880.

Thatcher, Oliver Joseph, an American historian; was graduated at Wilmington College, O., in 1878, and at the Union Theological Seminary in 1885; studied abroad in 1885–1888; was Professor of Ecclesiastical History at the United Presbyterian Theological Seminary in 1890–1892. He became assistant Professor of History at the University of Chicago in 1893, and was made associate Professor of Mediæval and English History there in 1896.

Thaxter, Mrs. Celia (Leighton), an American poet; born in Portsmouth, N. H., June 20, 1836. She spent her childhood and most of her later life at the Isles of Shoals. She died on the island of Appledore, Isles of Shoals, Aug. 26, 1894.

Thayer, Alexander Wheelock, an American writer on music and musicians; born in 1817. He contributed to the "Dictionary of Music"; was musical critic of the New York "Tribune"; afterward was consul at Trieste, 1859–1897. He died in Trieste, July 15, 1897.

Thayer, Eli, an American educator; born in Mendon, Mass., June 11, 1819; was graduated at Brown University in 1845. He originated and organized the "Emigrant Aid Company," and labored till 1857 to obtain the support of the Northern States for his plan to send anti-slavery settlers to Kansas. He was a member of Congress in 1856–1861, when he made his famous speeches on "Central American Colonization," "Suicide of Slavery," and the admission of Oregon. While the Civil War was in progress he proposed a plan for the military colonization of Florida as a war measure. Subsequently he urged his colonization scheme as a remedy for polygamy in Utah; wrote and published several books; and invented a hydraulic elevator, a safety steam

boiler, and an automatic boiler cleaner. He died in Worcester, Mass., April 15, 1899.

Thayer, Emma Homan, an American author; born in New York city, Feb. 13, 1842; was educated at Rutgers College and took a course in art at the National Academy of Design, New York city, where she exhibited numerous figure paintings; settled in Colorado in 1882; and made sketches of the flora of that vicinity. Her publications include: "Wild Flowers of Colorado," "Wild Flowers of the Pacific Coast," etc. She died in 1908.

Thayer, James Bradley, an American educator; born in Haverhill, Mass., Jan. 15, 1831; was graduated at Harvard College in 1852 and at its law school in 1856; admitted to the bar in Boston the same year and practised there till 1873, when he became Royall Professor of Law at Harvard University. Professor Thayer was the author of many well-known law books. He died in Cambridge, Mass., Feb. 14, 1902.

Thayer, Joseph Henry, an American educator; born in Boston, Mass., Nov. 7, 1828; was graduated at Harvard University in 1850 and at the Andover Theological Seminary in 1857; was Professor of Sacred Literature at Andover Theological Seminary in 1864–1884; and in the latter year became Professor of New Testament Criticism and Interpretation in the Harvard Divinity School. His publications include: "Books and Their Use"; "The Change of Attitude Toward the Bible," etc. He died Nov. 26, 1901.

Thayer, Martin Russell, an American jurist; born in Petersburg, Va., Jan. 27, 1819; was graduated at the University of Pennsylvania in 1840, and admitted to the Pennsylvania bar in 1842. He was a member of Congress in 1863–1867; judge of the district court of Philadelphia in 1867; and presiding judge of the Court of Common Pleas in 1874–1896. His publications include: "The Duties of Citizenship"; "What is Demanded of the United States by the Obligations of Duty and National Honor," etc. He died in 1906.

Thayer, Sylvanus, an American military officer; born in Braintree, Mass., June 9, 1785; was graduated at Dartmouth College in 1807; and the United States Military Academy in 1808; and assigned to the Engineer Corps. He took part in the War of 1812–1815; was chief engineer on the Niagara frontier, at Lake Champlain, and in the defense of Norfolk, Va.; was promoted captain of engineers in 1813, and brevetted major in 1815 for distinguished services. In 1815 he was sent to Europe to examine military works and schools, and to study the operations of the allied armies before Paris; was recalled in 1817 on being appointed superintendent of the United States Military Academy, which post he held till 1833, when he resigned. During his administration he organized the institution on its present basis. He was brevetted lieutenant-colonel in 1823, major in 1828, and colonel in 1833. In 1838–1863 he was engaged in the construction of defenses in and about Boston harbor. He was promoted lieutenant-colonel of engineers in 1838, colonel in 1863, and brevet Brigadier-General May 31, 1863, and was retired the following day. He was a member of various scientific associations; gave $70,000 to found the Thayer School of Civil Engineering at Dartmouth College; $10,000 to Braintree for a public library; and bequeathed $300,000 for the endowment of an academy in Braintree. He was the author of "Papers on Practical Engineering" (1844). He died in South Braintree, Mass., Sept. 7, 1872. His body was reinterred in West Point, Nov. 8, 1877, where a statue was raised to his honor which bears the inscription, "Colonel Thayer, Father of the United States Military Academy."

Thayer, William Makepeace, an American clergyman; born in Franklin, Mass., Feb. 23, 1820. His books attained great popularity, several being reprinted abroad in German, French, Italian, Greek, Swedish, etc. Among his works are: "The Bobbin Boy," "The Pioneer Boy," "Ethics of Success," etc. He died in Franklin, Mass., April 7, 1898.

Thayer, William Roscoe, an American author; born in Boston, Mass., Jan. 16, 1859; studied in Europe, and was graduated at Harvard

University in 1881; became editor of the "Harvard Graduates' Magazine" in 1892. His publications include: "The Dawn of Italian Independence," "History and Customs of Harvard University," etc.

Theater, or **Theatre,** a building devoted to the representation of dramatic spectacles; a play-house. Among the Greeks and Romans theaters were the chief public edifices next to the temples, and many of them were of enormous size. The theater of Marcellus at Rome, the external walls of which are still in existence contained seats for 30,000 spectators. The Greek theaters were semi-circular; that part in which the chorus danced and sang was called the orchestra; behind this, and facing the audience, was the stage for the performers, who took part in the drama; the back of the stage being filled in by a permanent architecturally decorated scene. Roman theaters also formed semi-circles with seats rising in the form of an amphitheater for the spectators, at the chord of which was the stage (scena), with its permanent decorations. The orchestra, which was the space between the stage and the lowest tier of spectators, was employed by the Greeks for theatrical purposes, whereas the Romans turned it into seats for the senators. The topmost tier was generally crowned with a covered portico. The whole mass of the rows of seats was supported by a solid substructure of piers and arches, which formed passages of three stories one above another, retaining the circular form of the building; while externally they formed arcades, which were surrounded with half-columns or piers with entablatures over them. Modern theaters are generally constructed on a semi-circular or horse-shoe plan, with galleries running round the walls. The portion of a modern theater corresponding to the ancient orchestra is occupied mainly by spectators, the orchestra taking up only a small part of it next to the stage.

Theban Legion, according to tradition, a body composed of Christians, who submitted to martyrdom rather than attack their brethren during the persecution of the Emperor Maximin or sacrifice to the gods, about A. D. 286. Their leader, Maurice, has been canonized.

Thebes, the name of a celebrated Egyptian city, formerly the capital of Southern or Upper Egypt; called by the Egyptians Tuabu, by the Hebrews No-Amon, by the Greeks Thebæ, and at a later period Diospolis Magna. It lies in the broadest section of the valley of the Nile, in about latitude 26° N. The central situation of Thebes secured it from the attacks of the N. enemies of Egypt, and contributed to its prosperity; and here the worship of Amen-Ra arose in all its splendor; magnificent palaces and temples were built in its different quarters by the great monarchs of the Theban dynasties, and were added to by later kings, down to the time of the Ptolemies and Antoninus, to the 2d century A. D. It was enriched by the spoils of Asia and the tributes of Ethiopia, and its fame and reputation had reached the early Greeks.

In the plenitude of its power it sent forth an army of 20,000 war chariots; but about 1100 B. C. the Bubastite and Tanite dynasties removed the capital again to the N., to Sais and Memphis, and thenceforth Thebes declined in importance.

Thebes, or **Thiva,** the capital of Bœotia in ancient Greece; founded, according to tradition, by a colony of Phœnicians, under Cadmus, 1550 B. C. or 1400 B. C. They were driven out by the Bœotians, 1124 B. C. Platæa, one of the Bœotian cities, revolted from Thebes 510 B. C., and applied for help to Athens. A war ensued between Thebes and Athens, in which the latter was victorious. This caused much animosity between Thebes and Athens, and in the Persian war, 480 B. C. the Thebans deserted the cause of Greece and fought against the Athenians at Platæa, 479 B. C. The Athenians invaded Bœotia, and established a democratic government in Thebes, 456 B. C. The Thebans were allies of the Spartans in the Peloponnesian war, 431 to 404 B. C. Sparta having claimed supremacy over the whole of Greece, the Thebans joined the Athenians, 395 B. C. The peace of Antalcidas put an end to the war, 387 B. C., and deprived Thebes of her supremacy over Bœotia. The Spartans, who treacherously seized the citadel of Thebes 382 B. C. were defeated at Leuctra, in July, 371 B. C., and the

Thebans regained their power in Greece. Thebes was razed to the ground by Alexander III., 335 B. C., after which it never again formed an independent State. Cassander restored the city 315 B. C., and it was taken by Demetrius 293 B. C., and again 290 B. C. The Thebans were defeated in an attempt to expel the Bulgarians from Greece in 1040, and their city was plundered by the Normans of Sicily in 1146. It was one of the most flourishing cities of Greece during the 10th and 11th centuries. The modern Thebes was almost wholly destroyed by an earthquake in 1893.

Theism, etymologically equivalent to belief in a god or gods, and as such opposed to Atheism, is now usually understood to mean the doctrine of the one, supreme, personal God, "in whom we live, and move, and have our being"—as distinguished from Polytheism, which recognizes more gods than one; from Pantheism, which denies the divine personality; from Agnosticism, which denies that we can know anything of God; and from Deism, which, etymologically equivalent to Theism, is generally defined as recognizing the personality of God, but denying His providence and active presence in the life of the world. Deism further explicitly rejects revelation and trinitarian conceptions of the godhead, while Theism may or may not accept these doctrines.

Themis, in Greek mythology, one of the Titanides, the daughter of Uranus and Ge, was after Metis married to Zeus, and bore him the Horæ — Eunomia ("Equity"); Dike ("Justice"), and Eirene ("Peace"), also the Moirai or Fates. She was regarded as the personification of order and justice, or of whatever is established by use and wont; and as such was charged by Zeus to convoke the gods, and preside over them when assembled, being likewise represented as reigning in the assemblies of men. In art Themis holds a cornucopia and a pair of scales.

Themistocles, an Athenian general and statesman; born about 514 B. C. He saw what was best for Athens when he turned the attention of his countrymen to the sea and convinced them that a powerful fleet was absolutely necessary for their welfare. A large sum of money, the produce of the silver mines of Laurium, which it was proposed to divide among the people, was devoted to its construction. During the war with Persia which followed, Themistocles commanded the Athenian squadron, which almost totally destroyed the Persian fleet at Salamis. The victor of Salamis was now the foremost name in the minds and mouths of men. The rebuilding of the walls of Athens by his advice on a scale far larger than anything in existence aroused great uneasiness among the allies of Sparta, but, by a series of adroit stratagems, Themistocles succeeded in cajoling the ephors till the walls had reached a height sufficient for defense. But his popularity was now waning, and in 471 B. C. ostracism was demanded, and he was banished from Athens, and later took refuge at the Persian court, where he was treated with great distinction. He died in 449, according to some accounts, by his own hands.

Theocracy, that government of which the chief is, or is believed to be, God himself, the priests being the promulgators and expounders of the divine commands. The most notable theocratic government of all times is that established by Moses among the Israelites. The early colonial governments of Massachusetts and New Haven have sometimes been called theocracies, owing to the predominance of the religious element in their administration.

Theocritus, a Greek poet; born at Syracuse, who flourished about B. C. 280. We have under his name 30 idyls or pastoral poems, of which, however, several are probably by other authors. Most of his idyls have a dramatic form and consist of the alternate responses of musical shepherds. His language is strong and harmonious.

Theodolite, a most important instrument for measuring horizontal and vertical angles, but particularly adapted for accurately measuring the former. Its principle is identical with that of the altitude and azimuth instrument; the construction and purpose of the two, however, differ, the latter being employed for astronomical purposes, while the theodolite is used

for land surveying; but the better instruments of this class may be employed for observing the altitude of celestial bodies. The vertical circle is not generally, however, of sufficient size, nor so graduated as to be available for very accurate astronomical observations.

When a point is to be viewed with the telescope, the telescope is moved so that the image of the point coincides with the intersection of the cross wires. The vertical limb is divided into degrees, and is capable of being read by means of the vernier and the microscope to thirds of a minute. A pair of plates, constituting at their edge the horizontal limb of the instrument, are free, when unclamped, to move independently of each other. The plate carries a magnetic compass and two spirit levels at right angles to each other, by means of which the circle may be brought accurately into the horizontal plane by raising or depressing it by means of the screws. The plate is furnished with two verniers, diametrically opposite to each other, the degrees marked on which are read off by the microscope. By the motion of the telescope, on the horizontal axis of the vertical limb, altitudes and vertical angles can be measured, while, by its motion on the vertical axis, the angular distances between two objects can be ascertained by the readings on the horizontal circle.

Theodora, the famous consort of the Byzantine emperor, Justinian I.; was, according to the dubious evidence of Procopius, the daughter of Acacius, a bear-ward at Constantinople; and had already been by turns actress, dancer, and harlot, when she won the heart of the austere and ambitious Justinian, to become in succession his mistress, his wife, and the sharer of his throne (527). Theodora was of less than middle height, and her complexion was pale, but such was her beauty that Procopius tells us "it was impossible for mere man to describe her comeliness in words, or imitate it in art." Never thereafter did the breath of scandal touch her name; she became Justinian's truest counsellor, bore a chief share in the work of government, and saved the throne by her high courage at the crisis of the Nika riots (532). She lavished her bounty on the poor, and especially on the unfortunate of her own sex, and died at 40 (548), her slender and graceful frame worn out by the anxieties of State.

Theodore of Mopsuestia, an exegete of the early Church; born in Antioch about the middle of the 4th century. About the year 383 he became a presbyter in Antioch, and about 392 he was chosen Bishop of Mopsuestia in Cilicia. Theodore wrote commentaries on almost all the books of Scripture, of which only remain, in the Greek, that on the Minor Prophets; in Latin translations, those on the lesser epistles of Paul, besides many fragments, especially on the epistle to the Romans. He died at peace with all men in 428 or 429.

Theodore II., King of Abyssinia; born in the province of Kwara in 1818; for many years a rebel; finally fought his way to the throne in 1855. He was a man of great parts, an inveterate foe of Islamism, a born ruler, and an intelligent reformer. But intolerance of any power save his own finally made a tyrant of him; and in consequence of the imprisonment of Consul Cameron and other British subjects he brought on himself a war with England, which ended, April 13, 1868, in the storming of Magdala and the death (supposedly by suicide) of Theodore.

Theodoret, a Church historian; born in Antioch about 390; early entered a monastery; and in 423 became Bishop of Cyrus, a city of Syria. Here he labored with the utmost zeal, and he himself claims to have converted over 1,000 Marcionites. As a foremost representative of the school of Antioch he became deeply involved in the great Nestorian and Eutychian controversies, and was finally deposed from office by the celebrated Council of Ephesus in 449. This was reversed by the general council of Chalcedon in 451, but Theodoret did not long survive his restoration, dying about 457. His works consist of commentaries on Canticles, the Prophets, Psalms, and the whole of St. Paul's Epistles; a "History of the Church," from A. D. 325 to 429, in five books; "A Concise History of Heresies," etc.

Theodoric, King of the Ostrogoths; born in Pannonia in 455; son of Theodemir, King of the Ostrogoths of Pannonia. From his eighth to his 18th year he lived as a hostage with the Emperor Leo at Constantinople. Two years after his return he succeeded to the throne. In 493 after several bloody engagements, Theodoric induced Odoacer, who had assumed the title of King of Italy, to grant him equal authority. The murder of Odoacer at a banquet soon after opened the way for Theodoric to have himself proclaimed sole ruler. Theodoric ruled with great vigor and ability. He attached his soldiers by assigning them a third part of the lands of Italy, on the tenure of military service; while among his Italian subjects, whom he conciliated by introducing an improved administration of justice, he encouraged industry and the arts of peace. Though, like his ancestors, he was an Arian, he never violated the peace or privileges of the Catholic Church. He died in Ravenna, Italy, August 30, 526.

Theodosius I., the Great, son of Theodosius, a general; one of the most notable and most capable of the later Roman emperors; born in Cauca, Spain, about 346; served under his father in Britain, Germany, and Africa, and won fame as a general by his exploits in Mœsia. On his father's death he retired to his native farm, whence he was summoned by Gratian to become his colleague in the purple and emperor in the East (379). He made Thessalonica his headquarters, and within four years, through patience and tact, after reviving the spirits of the imperial troops by small but decisive victories, he broke up the vast Gothic army, attached many of its members to the empire as faithful soldiers and allies under their own chiefs, and restored tranquillity to the troubled country S. of the Danube. He became sole Roman emperor in 394, and died on Jan. 17, 395 — a date memorable in the history of the later Roman empire, for almost immediately thereafter followed the barbarian invasions of Greece and Italy, which led directly to the subsequent Teutonic settlements in the S. and indirectly to the formation of the kingdoms of modern Europe.

Theology, a term applied by the classic authors to treatises on the nature and worship of the gods. Augustine quotes Eusebius and Varro as dividing theology into three kinds: the fabulous, that of the poets; the natural, that of the philosophers; and the political, that of the priests and the common people. The first and second kinds could be changed according to the will of the investigators; but the last could not be altered without national consent.

In Christianity, theology is the science which treats of divine things, especially of the relations of man to God. Doctrinal formulas are recognized in Scripture, but the term theology does not occur, though the elements of which it is compounded are found in close connection. Theology is primarily divided into natural and supernatural, or revealed; the former deduced by reason from a survey of the universe, the latter founded on revelation. Natural religion is recognized in Scripture (Ps. xix: 1–6, Rom. i: 19, 20), and is held to establish the being, power, wisdom, and goodness of God, the obligation of His moral law and the folly and danger of transgressing it, and the immortality of the soul. Revealed religion is considered to superadd to these doctrines those of the Trinity, the creation and fall of man, the penalty of sin, the mission, work, and atoning death of Christ, His resurrection, ascension, and second advent, with many other doctrines.

Theophilus, a legendary coadjutor-bishop at Adana in Cilicia, who, when deposed from his office through slanders, gave his soul in bond to the devil, and consequently was reinstated the next morning. But he was soon overtaken with remorse, and through 40 days' fasting and prayers prevailed on the Virgin to make intercession for him. She tore the bond from the devil, and laid it upon the breast of the repentant sinner as he lay asleep in the church. Theophilus then made a public confession of his crime and of the mercy of the Virgin, and died three days after.

Theophrastus, a Greek philosopher; often called the "father of botany"; a native of Eresus, in Les-

bos; flourished in the 5th century B. C. He became a pupil of Plato at Athens, and made, at the academy, the acquaintance of Aristotle; but he left the academy after Plato's death, and was absent from Athens for some years. On his return, he gladly studied philosophy under his friend Aristotle, who had so high a regard for him as to bequeath to him his library, and to name him his successor. Theophrastus had extraordinary success as head of the Lyceum, and was attended, it is said, by 2,000 disciples. Among them were Demetrius, Phalereus, and Menander. A charge of impiety was brought against him, but he successfully defended himself, and generously interposed to save his adversary from the popular vengeance. He was, however, compelled to leave Athens in 305 B. C., under the law which banished all philosophers. The law was soon repealed and he returned to his post and peacefully taught and commented on the system of his master, Aristotle, till his death.

Theorbo, in music, an old stringed instrument resembling the lute in form or tone. It had two necks, to the longest of which the bass strings were attached. It was employed for accompanying voices, and was in great favor during the 17th century.

Theorem, in geometry, a proposition to be proved; a statement of a principle to be demonstrated; that is, the truth of which is required to be made evident by a course of reasoning called a demonstration.

Theoria Motus, or **Theoria Motus Corporum Cœlestium,** the names by which is usually quoted the work of Gauss, in which he first showed the method of computing an orbit from three determinations of a planet's or comet's position, and thus rescued astronomers from the danger of losing the newly discovered asteroid Ceres after it had disappeared in the region of the sun.

Theosophy, a name which since the time of Ammonius Saccas, in the 3d century after Christ, has been used in the West to cover various schools of religious philosophy, which all unite in the fundamental conception that man, in his innermost nature, is a spiritual being, one in his essence with the Universal Spirit manifested in and through the universe. In this general sense it includes mystics differing from one another in details.

Therapeutæ, an ascetic sect, supposed to live chiefly on Lake Mareotis, near Alexandria. Their discipline resembled that of the Essenes, but was more severe in food and in the preference for the solitary life to the common fellowship. Throughout the week each lived in his lonely dwelling, but on the Sabbath they assembled for worship.

Therapeutics, the science which treats of the healing of diseases. It deals with the form, manner, and time in which drugs should be administered, classifies remedial agents, and investigates the laws of health.

Thermite, a welding compound of oxide of iron and alum, useful also, with titanium oxide, in manufacturing castings free from air-holes.

Thermo Barometer, an instrument for measuring altitudes by means of determining the boiling point of water. They consist essentially of a small metallic vessel for boiling water, fitted with very delicate thermometers, which are only graduated from 80° to 100°; so that each degree occupying a considerable space on the scale, the tenths, and even the hundredths of a degree, may be estimated, and thus it is possible to determine the height of a place by means of the boiling point to within about 10 feet.

Thermodynamic Engine, any form of heat engine (as gas or steam engines) by means of which a percentage of the heat lost by one body called the source, on account of its connection with another body called the refrigerator, is converted into kinetic energy or mechanical effect, and made available for the performance of work.

Thermodynamics, the branch of theoretical physics which treats of heat as a mechanical agent, and is the basis on which the modern doctrine of energy is built. Thermodynamics is based on two laws. The first law enunciates heat to be a form of energy and subject to the conservation principle. A given quantity of work can always be transformed into an equivalent quantity of heat; but in transforming heat into work a cer-

tain limitation exists which is expressed in the second law of thermodynamics. This law asserts that it is impossible, by physical processes, to transform any part of the heat of a body into mechanical work except by allowing heat to pass from that body to another at a lower temperature.

Thermoelectricity, electricity produced at the junction of two metals, or at a point where a molecular change occurs in a bar of the same metal, when the junction or point is heated above or cooled below the general temperature of the conductor. Thus when wires or bars of metal of different kinds, as bismuth and antimony, are placed in close contact, end to end, and disposed so as to form a periphery or continuous circuit, and heat then applied to the ends or junctions of the bars, electric currents are produced.

Thermograph, a thermometer provided with a recording device. The form generally used has a crescent shaped bulb, filled with alcohol and hermetically sealed. A change in the temperature affects the curve of the bulb, and the alteration of form is communicated to a series of multiplying levers, which in turn exaggerate the motion, and give impetus to a recording pen. This pen makes a tracing on the ruled paper of a moving cylinder.

Thermometer, in physics, an instrument for measuring intensity of heat or temperature. Its construction involves the arbitrary selection of a thermometric body, with standard thermal states equivalent to ice and boiling water at standard pressures, a number being given to one of these standard temperatures, and a scale or number of degrees established between the two. Mercury is generally employed, and an ordinary thermometer consists of a spherical or cylindrical glass bulb at the end of a very fine tube, the bulb being completely filled and the tube partly filled, with mercury, while the space above the mercury contains only a small quantity of mercury vapor, which offers no resistance to the expansion of the mercury. On the Centigrade or Celsius thermometer (used by scientists everywhere), the freezing is 0° and the boiling point 100°; on the Reaumur thermometer the freezing point is 0° and the boiling point 80°; on the Fahrenheit thermometer (in general use in the United States and England), the freezing point is 32°, and the boiling point is 212°. Degrees above 0° are termed + degrees, while those below 0° are termed — degrees. Mercury can only be used for temperatures between —40° and + 675°, since it freezes at—40° and boils at 675°. For lower temperatures alcohol is used; and for high temperatures air thermometers are employed, in which changes of temperature are measured by the expansion or contraction of a known volume of air.

Thermometric Alarm, an instrument to release an alarm when a dangerous heat is reached in an apartment; a form of fire alarm.

Thermometric Analysis, in chemistry, a term applied to certain approximate methods of analysis, depending on the observation of the temperature when a phenomenon takes place, or of the changes of temperature accompanying chemical reactions.

Thermometric Ventilator, a chimney valve consisting of a circular disk accurately balanced on a spindle. On one side of the disk is an inverted siphon, open at one end and having a bulb at the other. The lower part of the siphon tube contains mercury, and the bulb is full of air. Any increase of temperature expands the air in the bulb, depresses the mercury and, causing it to rise in the other arm of the tube, opens the valve, thus allowing the air to pass.

Thermopylæ, a famous pass leading from Thessaly into Locris, and the only road by which an invading army can penetrate from Northern into Southern Greece. It lies S. of the present course of the river Spercheius, between Mount Œta and what was anciently an impassable morass bordering on the Maliac Gulf. In the pass are several hot springs, from which Thermopylæ probably received the first part of its name. Thermopylæ has won an eternal celebrity as the scene of the heroic death of Leonidas and his 300 Spartans in their attempt to stem the tide of Persian invasion (480 B. C.). Again in

279 B. C. Brennus, at the head of a Gallic host, succeeded, through the same treachery that had secured a victory to Xerxes, in forcing the united Greeks to withdraw from the pass.

Thermopylæ of America, a phrase applied to Fort Alamo, Tex.

Theseus, a mythical king of Athens and famous hero of antiquity, son of Ægeus by Æthra, the daughter of Pittheus of Troezen, in Peloponnesus, of whom many notable deeds are related, as the slaying of the Minotaur and the freeing of Athens from the tribute of seven youths and seven maidens annually sent to Crete to be devoured by that monster. As king of Athens he is reputed to have governed with mildness, instituted new laws, and made the government more democratic.

Thespis, a native of a village near Athens, who lived in 6th century B. C., reputed to be the inventor of tragedy and of masks always worn by Greek actors in performing. His first representation was in 535 B. C.

Thessalonians, Epistles to the, are the earliest existing writings of the Apostle Paul. Though the footnotes in the Authorized Version state that the Epistles were written from Athens, it is clear from a study of their contents and of the Acts, that they must have been written at Corinth; the first about the year 49, and the second in the following year. The genuineness of the Epistles has been assailed by Baur, but since Jowett's exhaustive reply, the majority of critics concede the Pauline authorship. The contents of the Epistles are more practical than doctrinal. The first was written after receiving Timothy's report of his visit to Thessalonica, and was congratulatory and encouraging. Paul's remarks on the second-coming in that Epistle were, however, misunderstood, and in the second Epistle he corrects the wrong inferences deduced, and adds cautions against designing persons who misrepresented his teaching.

Thessaly, the largest division of ancient Greece; lay S. of Macedonia and E. of Epirus; being separated from the latter by Mount Pindus, and from the former by the Cambunian Mountains; the Maliac Gulf and Mount Œta bounding it on the S. It is a vast plain shut in on every side by mountains; on the N. and W. by those already named, on the S. by Mount Othrys, and on the E. by Mounts Pelion and Ossa, the only opening being the Vale of Tempe in the N. E., between Ossa and Olympus. This plain is drained chiefly by the Peneus river (now Salambria) and its tributaries, and is the most fertile in all Greece. Thessaly was originally inhabited by so-called Pelasgians, who, however, were either expelled or reduced to slavery by Dorian immigrants from the more rugged region of Epirus about 1000 B. C. About 374 B. C. Jason, tyrant of Pheræ, was elected Tagus (chief-magistrate) of all Thessaly. The rule of Jason's successors became so unbearable that aid was sought from Philip of Macedon, who in 344 subjected the country to Macedonia. Thessaly remained subject to the Macedonian kings till the victory of Cynoscephalæ, in 197 B. C., brought it under the protection of Rome. Under the emperors Thessaly was united with Macedonia, but after Constantine it was a separate province. In A. D. 1204 with other portions of the Eastern Empire, it came under the dominion of the Venetians, and in 1355 was taken by the Turks. In 1881 Turkey agreed to cede, and Greece to accept, Thessaly S. of the ridge of mountains forming the watershed of the Salambria, by much the largest and most fertile section of the province. This section now constitutes the Departments of Larissa, Trikhala, and Phthiotis and Phocis; pop. (Est.) 500,000.

Thetis, in mythology, one of the sea deities, who was courted by Neptune and Jupiter. But when the gods were informed that the son she would bring forth must become greater than his father, they ceased their solicitations.

Thielt, an ancient town of Belgium in West Flanders, 15 miles S. E. of Bruges, 17 miles W. of Ghent; was formerly a noted cloth-making place; now has manufactures of linen, lace, leather hats, and soap; was in the fighting zone of the World War. See APPENDIX: *World War.* Pop. about 14,300.

Thiers, Louis Adolphe, a French statesman; born in Marseilles, France,

April 16, 1797. In the government of Louis Philippe, Thiers held several offices, till (1840) he found himself at the head of the ministry for a few months, and then retired into private life. After the revolution of 1848 he was elected deputy to the Assembly, and voted for the presidency of Louis Napoleon, but was ever after one of his fiercest opponents; and at the coup d'etat (Dec. 2, 1851) he was arrested and banished. Returning to France in the following year, he remained in comparative retirement till 1863, when he was elected one of the deputies for Paris.

During the terrible crisis of 1870–1871 he came to the front as the one supreme man in France. After the fall of Paris he was returned to the National Assembly, and on Feb. 17, 1871, he was declared chief of the executive power. The first duty imposed on him as such was to assist in drawing up the treaty of peace, whereby France lost Alsace and Lorraine and agreed to pay an enormous indemnity; his second was to suppress the Communist insurrection, which broke out within three weeks of the signing of the treaty. This done, his next task was to free the soil as quickly as possible from the invaders by the payment of the ransom, which also was effected in an incredibly short space of time. The Assembly in August, 1871, prolonged his tenure of office and changed his title to that of President. In November, 1872, Thiers declared himself in favor of the republic as a definitive form of government for France, and thus to some extent brought about the crisis which resulted in his being deprived of the presidency. He died in 1877.

Thilly, Frank, an American educator; born in Cincinnati, O., Aug. 18, 1865. He was instructor in logic and history of philosophy at the Sage School of Philosophy, Cornell University, in 1892–93; Professor of Philosophy at the University of Missouri, in 1893–1904; Professor of Psychology at Princeton, in 1904–06; then Dean of College of Arts and Sciences at Cornell.

Thimble, a metallic cap or sheath used to protect the end of the finger in sewing. Seamstresses use a thimble having a rounded end with numerous small pits or indentations. Those used by tailors are open at the end. The manufacture of thimbles is very simple. Coin silver is mostly used, generally silver dollars, which are melted, and cast into solid ingots. These are rolled into the required thickness, and cut by a stamp into disks of any required size. A solid metal bar the size of the inside of the intended thimble, moved by powerful machinery up and down in a bottomless mold of the size of the outside of the thimble, bends the circular disks into the thimble shape as fast as they can be placed under the descending bar. The work of brightening, polishing, and decorating is done on a lathe.

Thirlwall, Connop, an English bishop and historian; born in Stepney, Middlesex, England, Jan. 11, 1797. For 34 years he labored with the utmost diligence in his diocese, building churches, parsonages, and schools, and augmenting poor livings (to the extent of $150,000 from his own pocket); and, though he wrote no great work, his 11 "Charges" remain an enduring monument of breadth of view and soundness of judgment in reference to all ecclesiastical controversies of one generation. He was appointed chairman of the Old Testament Revision Committee, and resigned his see in May, 1874, retiring to Bath, where he died July 27, 1875.

Thirlwall's massive understanding, vast learning, and fundamental breadth and fairness of mind were a combination of enormous value to the Church of England. Few men have left a more pleasing though unconscious monument of noble character than the beautiful series of letters to a young lady — the "Letters to a Friend," edited by Dean Stanley in 1881.

Thirst, a sensation resulting from a peculiar state of the system, but especially of the mucous membrane of the fauces, usually caused by an insufficient supply of liquid. In cases of extreme thirst there is a peculiar sense of clamminess in the mouth and pharynx, which, with the other disagreeable feelings, is almost immediately relieved by the introduction of liquid into the stomach, where it is ab-

sorbed by the veins. That the thirst is relieved by the absorption of the fluid, and not by its action as it passes over the mucous membrane, which seems to suffer most, is proved by the facts (1) that injection of liquids into the stomach through a tube (in cases of wounded œsophagus), and (2) the injection of thin fluids, as water, into the blood, remove the sensation of thirst.

Thirty Years' War (1618 to 1648), a war in Germany, at first a struggle between Roman Catholics and Protestants. Subsequently it became a struggle for political ascendency in Europe. On the one side were Austria, nearly all the Roman Catholic princes of Germany, and Spain; on the other side were, at different times, the Protestant powers and France. The occasion of this war was found in the fact that Germany had been distracted ever since the Reformation by the mutual jealousy of Catholics, Lutherans, and Calvinists. Certain concessions had been made to the Protestants of Bohemia by Rudolph II. (1609), but these were withdrawn by his successor Matthias in 1614, and four years afterward the Bohemian Protestants were in rebellion. Count Thurn at the head of the insurgents repeatedly routed the imperial troops, compelling them to retire from Bohemia, and (1619) invaded the archduchy of Austria. Matthias having died in 1619, he was succeeded by Ferdinand II., who was a rigid Catholic, but the Protestants elected as their king Frederick, Elector Palatine, who was a Protestant. Efforts at mediation having failed, the Catholic forces of Germany marched against Frederick, who, with an army of Bohemians, Moravians, and Hungarians, kept the field till Nov. 8, 1620, when he was totally routed at Weissenberg, near Prague, by Duke Maximilian of Bavaria. The Protestant cause was now crushed in Bohemia, and the people of that province suffered cruel persecution. The dominions of Frederick, the Palatinate of the Rhine included, were now conquered, the latter being occupied by Count Tilly, assisted by the Spaniards under Spinola. At the Diet of Ratisbon (March, 1623) Frederick was deprived of his territories, Duke Maximilian receiving the Palatinate. Ferdinand, whose succession to the throne of Bohemia was thus secured, had now a favorable opportunity of concluding a peace, but his continued intolerance toward the Protestants caused them to seek foreign assistance, and a new period of war began. Christian IV. of Denmark, induced partly by religious zeal and partly by the hope of an acquisition of territory, came to the aid of his German coreligionists (1624), and being joined by Mansfeld and Christian of Brunswick, advanced into Lower Saxony. There they were met by Wallenstein, Duke of Friedland, who in 1626 defeated Mansfeld at Dessau, while Tilly was also successful in driving Christian back to Denmark. In the peace of Lubeck which followed (May, 1629) Christian of Denmark received back all his occupied territory, and undertook not to meddle again in German affairs. After this second success, Ferdinand again roused his people by an edict which required restitution to the Roman Catholic Church of all church lands and property acquired by them since 1552.

To the assistance of the Protestants of Germany came Gustavus Adolphus, King of Sweden, who landed (1630) with a small army on the coast of Pomerania. Joined by numerous volunteers, and aided by French money, he advanced, and routed Tilly at Breitenfeld (or the battle of Leipsic, September, 1631), victoriously traversed the Main and the Rhine valleys, defeated Tilly again near the confluence of the Lech and the Danube (April, 1632), and entered Munich. Meanwhile the emperor sought the aid of Wallenstein, by whose ability and energy Gustavus was obliged to retire to Saxony, where he gained the great victory of Lutzen (November, 1632), but was himself mortally wounded in the battle. The war was now carried on by the Swedes under the chancellor Oxenstierna, till the rout of the Swedish forces at Nordlingen (September, 1634) again gave to the emperor the preponderating power in Germany. The Elector of Saxony, who had been an ally of Gustavus, now made peace at Prague (May, 1635), and within a few months the treaty was accepted

by many of the German princes. The Swedes, however, thought it to their interest to continue the war, while France resolved to take a more active part in the conflict. Thus the last stage of the war was a contest of France and Sweden against Austria, in which the Swedish generals gained various successes over the imperial forces, while the French armies fought with varied fortunes in West Germany and on the Rhine. Meanwhile the emperor had died (1637), and had been succeeded by his son, Ferdinand III. The struggle still continued till in 1646, the united armies of the French under the great generals Turenne and Conde, and the Swedes advanced through Suabia and Bavaria. The combined forces of Sweden, Bavaria, and France were then about to advance on Austria, when the news reached the armies that the peace of Westphalia (1648) was concluded, and that the long struggle was ended.

Thisbe, in classical legend, a Babylonish maiden beloved by Piramus. They lived in contiguous houses, and as their parents would not let them marry, they contrived to converse together through a hole in the garden wall. On one occasion they agreed to meet at Ninus's tomb, and Thisbe, who was first at the spot, hearing a lion roar, ran away in a fright, dropping her garment on the way. The lion seized the garment and tore it. When Piramus arrived and saw the garment, he concluded that a lion had eaten Thisbe, and he stabbed himself. Thisbe, returning to the tomb, saw Piramus dead, and killed herself also. The story is travestied in "The Midsummer Night's Dream," by Shakespeare.



STEMLESS THISTLE.

Thistle, the common name of prickly plants. There are numerous species, most of which are inhabitants of Europe. Some dozen species of thistle are common in the United States, spreading from New England to Florida; Canada thistle is one of the severest pests of the farmer.

Thistle, Order of the, a Scotch order of knighthood, sometimes called the Order of St. Andrew. It was instituted by James VII. (James II. of England), in 1687, when eight knights were nominated. It fell into abeyance during the reign of William and Mary, and was revived by Queen Anne in 1703. As at present constituted, the order consists of the British sovereign and knights to the number of 16.



STAR, COLLAR, AND ST. ANDREW OF THE ORDER OF THE THISTLE.

Thistle Crown, a gold coin of James VI. of Scotland (James I. of England), of the value of 97.3 cents. It bore on the obverse a rose, and on the reverse a thistle, both crowned.

Thistlewood Conspiracy, a conspiracy formed in London in 1820 to

assassinate the ministers of the crown at a cabinet dinner, and excite an insurrection in the city, so called from the name of its ringleader, Arthur Thistlewood, a profligate whom ill fortune had rendered desperate. The plot was discovered by a government spy, and the conspirators were seized in a garret in Cato street, Feb. 23, the day fixed on for the execution of the project. Thistlewood and four others were executed May 1, 1820.

Thoburn, James Mills, an American clergyman; born in St. Clairsville, O., March 7, 1836; engaged in missionary work in India in 1859. He was presiding elder at the India Conference in the United States in 1886–1888, and in the latter year was elected missionary bishop of India and Malaysia. He was author of several books along missionary lines.

Thomas, Arthur Lloyd, an American banker; born in Chicago, Ill., Aug. 22, 1851; was secretary of the Utah Treasury, and was supervisor of the census of Utah in 1880; governor of Utah in 1889–1893; and in January, 1898, became postmaster of Salt Lake City.

Thomas, Calvin, an American educator; born near Lapeer, Mich., Oct. 28, 1854; was instructor in the University of Michigan in 1878–1881; assistant professor there in 1881–1886, and full Professor of Germanic Languages and Literatures in 1886–1896, when he became Professor of German at Columbia University. His publications include "A Practical German Grammar"; "Goethe and the Conduct of Life," etc.

Thomas, Cyrus, an American archæologist; born in Kingsport, Tenn. July 27, 1825. He became Professor of Natural Science in the Southern Illinois Normal University in 1873; was State entomologist of Illinois in 1875–82. He died June 26, 1910.

Thomas, Edith Matilda, an American poet; born in Chatham, O., Aug. 12, 1854. She contributed to many periodicals, and published in book form: "The Inverted Torch"; "Fair Shadow Land"; etc.

Thomas, Frederick William, an American author; born in Charleston, S. C., in 1811. He was Professor of English Literature in the University of Alabama. He contributed much in prose and verse to periodicals, and published several books. He died in Washington, D. C., Sept. 30, 1866.

Thomas, George Henry, an American military officer; born in Southampton co., Va., July 31, 1816; was graduated at the United States Military Academy in 1836; took part in the Florida War in 1840–1842, and the war with Mexico in 1846–1848; participated in the Seminole campaign in 1849–1850; and served on frontier duty in California and Texas in 1850–1860. At the outbreak of the Civil War he was made a colonel of cavalry and took part in the operations in the Shenandoah valley in the summer of 1861, and later as commander of a division in the Army of the Ohio was actively engaged in the operations in Tennessee and Mississippi. Afterward, under General Rosecrans, as commander of a corps, saved the Union army from utter defeat at Chickamauga, and gained the nation's gratitude. In 1863, as commander of the Army of the Cumberland, he bore an important part in the battle of Missionary Ridge and in the Atlanta campaign under Sherman. In October, 1864, he was sent to Nashville to oppose the Confederates under Hood, whom he finally defeated before Nashville, Dec. 15, 1864. For his services in these operations he was promoted Major-General U. S. A. In 1868 was placed in command of 4th Military Division, comprising the territory of the Pacific and Alaska, and continued in this capacity till his death, in San Francisco, Cal., March 28, 1870.

Thomas, Isaiah, an American publisher; born in Boston, Mass., Jan. 19, 1749. He established and printed the "Massachusetts Spy," 1770–1801; imported and used the first font of music type; established the "Massachusetts Magazine" (1789–1796); printed noted editions of the Bible and Watts's "Psalms and Hymns." He died in Worcester, Mass., April 4, 1831.

Thomas, Jesse Burgess, an American clergyman; born in Edwardsville, Ill., July 29, 1832. He accepted the chair of Church history at

Newton Theological Institution in 1888. He was author of "The Old Bible and the New Science." He died June 7, 1915.

Thomas, John, an American military officer; born in Marshfield, Mass., in 1725; became colonel of provincials in 1759, and in 1760, in command of a regiment under General Amherst, was engaged in operations against the French at Lake Champlain and at Montreal. During the Revolutionary War he raised a regiment of volunteers and was appointed Brigadier-General; took part in the siege of Boston; forced the British to evacuate Dorchester; and participated in the Canadian campaign. He died in Chambly, Canada, June 2, 1776.

Thomas, John, an Anglo-American religious reformer; born in London, England, April 12, 1805; came to the United States in 1850; joined the Campbellite Baptists, which sect he left to found the Christadelphians; returned to England in 1860, and lectured extensively on the new sect, converting many. He died in Jersey City, N. J., March 5, 1871.

Thomas, John Robert, an American jurist; born in Mt. Vernon, Ill., Oct. 11, 1846. He was State attorney of Illinois for four years and held a seat in Congress in 1879–1889, serving as a member of the Committee on Naval Affairs. Owing to his interest in the new navy he was called the "father of the modern American navy." In 1897–1901 he was judge of the U. S. Court for the Indian Territory; in 1905–11 member of Congress. He died in 1914.

Thomas, John R., an American song writer; born in Newport, Wales, in 1830; came to the United States at an early age, taught music, and sang in opera and oratorio. His songs were highly popular. Among the best known are: "Some One to Love"; "'Tis but a Little Faded Flower"; "The Flag of the Free"; "The Mother's Prayer"; and "No Crown Without the Cross." He died in 1896.

Thomas, Joseph, an American lexicographer; born in Cayuga co., N. Y., Sept. 23, 1811. In 1851–1852 appeared his first book of "Etymology," followed by an edition of Oswald's "Etymological Dictionary." In 1854 he prepared "A New and Complete Gazetteer of the United States"; and in 1855 "A Complete Geographical Dictionary of the World." In 1864 appeared his comprehensive "Medical Dictionary"; and in 1870 his "Universal Pronouncing Dictionary of Biography and Mythology," which occupies a high place among books of reference. He died in Philadelphia, Pa., Dec. 24, 1891.

Thomas, Theodore, a German-American musician; born in Esens, Hanover, Germany, Oct. 1, 1835. He first played in public at the age of six. In 1845 his family removed to the United States, and for two years he played violin solos at concerts in New York. His first symphony concerts were given in 1864–1865, and extended (excepting from 1869 to 1872) till he left New York, in 1878, to take the direction of the College of Music at Cincinnati. He remained in Cincinnati till 1880, when he resigned this position and returned to New York. With brief intervals he was conductor of the Brooklyn Philharmonic Society 1862-91; of the N. Y. Philharmon. Soc. 1877-1891. He settled in Chicago, where, Dec., 1904, the Symphony Hall, built through his efforts, was opened. He died Jan. 4, 1905.

Thomas, Theodore Gaillard, an American physician; born in Charleston, S. C., Nov. 21, 1831. He was Professor of Gynæcology and Obstetrics at the College of Physicians and Surgeons, New York city, for many years. He was the author of "Diseases of Women" which has been translated into German, French, Spanish, Italian, and Chinese. D. 1903.

Thomas, William Davy, an American educator; born Jan. 5, 1844. He was made superintendent of the missions of the Presbyterian Church in the United States; became Professor of Mental and Moral Science at Gale College, and afterward its president.

Thomas, William Widgery, Jr., an American diplomatist; born in Portland, Me., Aug. 26, 1839; was graduated at Bowdoin College in 1860. During the 60's he became successive-

ly vice-consul-general at Constantinople; acting consul at Galatz, Moldavia; and consul at Gothenburg, Sweden. He was United States minister to Norway and Sweden in 1883–85; in 1889–94; and in 1897–1905.

Thomas, St., called Sydamus, or the twin, one of the 12 apostles of Jesus Christ. He is presumed to have been a native of Galilee. He is distinguished in sacred history by his disbelief of the resurrection of his master; on which Jesus vouchsafed to permit him to put his fingers into His wounds, and Thomas exclaimed, "My Lord and my God!" He is supposed to have suffered martyrdom in Coromandel, India, where there are still Christian churches which are called by his name.

Thompson, Almon Harris, an American geographer; born in Stodard, N. H., Sept. 24, 1839; became geographer of the United States Geological Survey in 1882. Died 1906.

Thompson, Augustus Charles, an American clergyman; born in Goshen, Conn., April 30, 1842. He was a delegate to the Mildmay Missionary Conference in 1878 and the London Missionary Conference in 1888. Died 1901.

Thompson, Charles Lemuel, an American clergyman; born in Allentown, Pa., Aug. 18, 1839. He was editor of "The Interior," Chicago, in 1877–1879. In 1888 he was elected Moderator of the Centennial General Assembly of the Presbyterian Church.

Thompson, Charles Miner, an American journalist; born in Montpelier, Vt., March 24, 1864; was graduated at Harvard College in 1886; was literary editor of the Boston "Advertiser" and later editor-in-chief of the "Youth's Companion." He wrote "The Nimble Dollar"; "Life of Ethan Allen," etc.

Thompson, Denman, an American actor; born in Girard, Pa., in 1833; began his professional career as a dancer, Irish character and general utility man. Later he starred in the comedy "Joshua Whitcomb," a play of his own, afterward presented under the title "The Old Homestead." He died April 14, 1911.

Thompson, Elizabeth, an American philanthropist; born in Lyndon, Vt., Feb. 21, 1821; was married to Thomas Thompson, a Boston millionaire, in 1845, and on his death in 1869 fell heir to the whole income of his immense estate. She gave large sums to the cause of temperance; founded the town of Long Mont, Kas., giving 640 acres of land and $300 to each colonist; and contributed largely to the purchase of the Vassar College telescope. She presented Frank B. Carpenter's painting of the "Signing of the Emancipation Proclamation by President Lincoln in the presence of his cabinet" to Congress. She died in Littleton, N. H., July 20, 1899.

Thompson, Hugh Miller, an American clergyman; born in County Londonderry, Ireland, June 5, 1830; was Professor of Church History at the Nashotah Theological Seminary and editor of the "American Churchman," Chicago, in 1860–1870. He was consecrated Bishop of Mississippi in 1887. Died Nov. 8, 1902.

Thompson, Henry Adams, an American educator; born in Stormstown, Pa., March 23, 1837; was Professor of Mathematics at Western College, Iowa, in 1861–1862, and of the same at Otterbein University in 1862–1867. He was president of the latter institution in 1872–1886. He was the Prohibition candidate for governor of Ohio in 1877, and was nominated for vice-president on the ticket with Neal Dow in 1880. He became an editor of the Sunday-school literature of the United Brethren Church in 1893, and editor-in-chief in 1897.

Thompson, (James) Maurice, an American author; born in Fairfield, Ind., Sept. 9, 1844. He was State geologist of Indiana, 1885–1889. He wrote nature studies. He published in book form: "Hoosier Mosaics," "The Witchery of Archery," "A Tallahassee Girl," "Alice of Old Vincennes," etc. He died Feb. 15, 1901.

Thompson, John Polk, an American inventor; born in Glasgow, Scotland, in 1838; came to the United States in 1848, and invented 14 distinct mechanical devices, each of which produced a radical improvement

in methods of carding, stop and let-off motions, and self-threading shuttles. He died in Olneyville, R. I., Sept. 16, 1899.

Thompson, Launt, an American sculptor; born in Abbeyleix, Ireland, Feb. 8, 1833. His productions include a bust entitled "Elaine"; "Morning Glory," a medallion; statues of Abraham Pierson at New Haven, Conn., and of Winfield Scott, at Washington, D. C.; portrait busts of William C. Bryant in the Metropolitan Museum, New York city, Edwin Booth as Hamlet, Samuel F. B. Morse, etc. He died in 1894.

Thompson, Richard Wigginton, an American lawyer; born in Culpeper co., Va., June 9, 1809. He was member of Congress from Indiana in 1841, and also in 1847. In 1877, he became Secretary of the Navy, but retired in 1881 to become chairman of the American Committee of the Panama Canal Company. His publications include: "The Papacy and the Civil Power"; "Recollections of Sixteen Presidents, From Washington to Lincoln," etc. He died in Terre Haute, Ind., Feb. 9, 1900.

Thompson, Robert Ellis, an American educator; born near Lurgan, Ireland, April 5, 1844. He was Professor of Latin and Mathematics in the University of Pennsylvania in 1868–1871, of Social Science there in 1871–1881, and of History and English in 1881–1892. He was editor of the "Pennsylvania Monthly" in 1870–1881, and of the "American Weekly" in 1881–1892. His publications include "Social Science and National Economy"; "Protection to Home Industry," etc.

Thompson, Vance, an American author; born in Cincinnati, O., April 17, 1863; was graduated at Princeton University in 1883; was the editor and founder of "M'lle New York," and wrote "The City of Torches"; "A Flash of Honor"; "Killing the Mandarin"; "The Carnival of Destiny"; "Eat and Grow Thin"; "Drink and Be Sober," etc.

Thompson, Will L., an American song-writer; born in Beaver co., Pa., Nov. 7, 1847. His works include "Thompson's Class and Concert"; "Thompson's Popular Anthems"; about 100 popular songs, such as "Gathering Shells on the Sea Shore"; "Drifting with the Tide"; "Come Where the Lilies Bloom"; and contributions to almost every hymnal and gospel song collection published in the United States. His "Softly and Tenderly Jesus is Calling" had a world-wide publication. He died in 1909.

Thompson, William Oxley, an American educator; born in Cambridge, O., Nov. 5, 1855; was president of Miami University in Oxford, O., in 1891–1899; and on July 13, 1899, was chosen president of the Ohio State University.

Thompson-Seton, Ernest, an American author and artist; born in South Shields, England, Aug. 14, 1860; lived in the backwoods of Canada in 1866–1870, and on the Western plains in 1882–1887; was educated at the Toronto Collegiate Institute and Royal Academy, London; became official naturalist to the government of Manitoba; studied art in Paris in 1890–1896; was one of the chief illustrators of the "Century Dictionary" and author and illustrator of "Wild Animals I Have Known," "The Biography of a Grizzly," "The Trail of the Sandhill Stag," "Wild Animal Play for Children," "Lives of the Hunted," etc., and became a popular lecturer on wild animal life. In December, 1901, his name was legally changed from Seton-Thompson to Thompson-Seton.

Thomson, Elihu, an American electrician; born in Manchester, England, March 29, 1853; came to the United States and subsequently secured more than 500 patents for inventions which included the Thomson method of electric welding. He was awarded the Grand Prix, in Paris, in 1889 for electrical inventions, received the decoration of Chevalier of the Legion of Honor, for electrical research, etc.

Thomson, William McClure, an American clergyman; born in Spring Dale, O., Dec. 31, 1806. In 1833 he vent as missionary to Syria and Palestine, remaining till 1876. His chief work, "The Land and the Book," is an accepted authority on Palestine and Syria. He died in Denver, Col., April 8, 1894.

Thor, the son of Odin and Jord; in Northern mythology, the highest of the Æsir after Odin. He is the strongest of all the gods, and defends Asgard and Midgard against the Jotuns. His kingdom is called Thrudvangar; his palace, Bilskirnir, has 540 rooms, and is the largest in the world. He rides in a car drawn by two he-goats amid thunder and lightning.

Thoracic Regions, in anatomy, 14 regions into which the thorax in man is divided by imaginary straight



THORAX.

lines, longitudinal and transverse, so that the exact situation of any spot may be described.

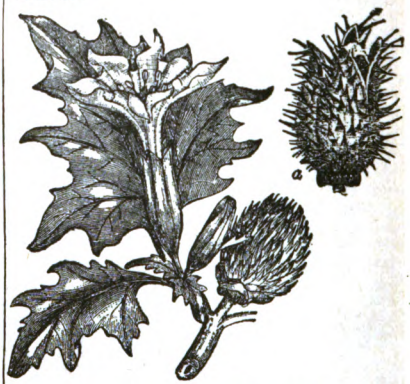
Thorburn, Grant, pseudonym Lawrie Todd, an American author; born in Dalkeith, Scotland, Feb. 18, 1773; emigrated to America in 1794. His publications in book form include: "Forty Years' Residence in America"; "Men and Manners in Great Britain"; "Fifty Years' Reminiscences of New York." He died in New Haven, Conn., Jan. 21, 1863.

Thoreau, Henry David, an American author; born in Concord, Mass., July 12, 1817. In 1845 he built for himself a hut in a wood near Walden pond, Concord, Mass., and there for two years lived the life of a hermit. After quitting his solitude, Thoreau pursued his father's calling of pencil maker at Concord. Besides contributing to the "Dial" and other periodicals, he published "A Week on the Concord and Merrimac Rivers," and "Walden, or Life in the Woods." After his death appeared "Excursions in Field and Forest," "The Maine Woods," "Cape Cod," and "A Yankee in Canada." Thoreau was a friend and disciple of Emerson. He died in Concord, May 6, 1862.

Thorianite, a radio-active mineral discovered, 1905, in Ceylon.

Thorn, the sharp point of a branch which has proved abortive. That this is its origin is shown by the fact that sometimes trees which are thorny in their wild state, have their spines converted into branches when long cultivated in a garden, as is the case with the apple and the pear. A thorn differs from a prickle, which is so superficial that it comes away when the bark is peeled off, while in similar circumstances a thorn, being deep seated, remains. Sometimes thorns bear leaves, as in the white-thorn.

Thorn, Conference of, an effort to explain away the differences between Catholics and Protestants, with a view to reunion. The gathering was originated by Ladislaus IV. of Poland. It met in August, 1645, lapsed into disputation, and broke up in November.



COMMON THORN APPLE.

Thorn Apple, a genus of plants The common thorn apple is an annual plant, with smooth stem and leaves,

white flowers, and erect prickly capsules, a native of the East Indies, but now often met with in North America. It contains a peculiar alkaloid, daturine, which is practically identical in its action with atropine. The leaves and seeds are employed in medicine. The dried leaves have a faintly narcotic smell, and an unpleasant bitter taste, the seeds, which are of a black color, are still more poisonous. A variety with pale violet flowers and purplish violet stem is frequently cultivated in gardens as an ornamental plant.

Thorne, Joseph, an American inventor; born in Marlboro, N. Y., Feb. 17, 1826; served through the Mexican War; became an engineer and was associated with Elias Howe while he was perfecting his sewing machine. Afterward he was connected with the Singer Company; established and operated a factory in Scotland; invented a typewriter, a sewing machine, a typesetting and distributing machine, etc. He died in Sing Sing, N. Y., May 4, 1897.

Thorntail, in ornithology, a popular name for the species of two genera of humming birds. The tail feathers in the first genus are much elongated and sharply pointed, and the tarsi are covered with a tuft of feathers. Discura, one of the species, has a racket at the end of the tail.

Thornton, Matthew, an American statesman; born in Ireland about 1714; came to America in 1717; took an active part in the overthrow of the royal government in New Hampshire; was president of the provincial convention of 1775 and speaker of the assembly in 1776; and served as judge of the Superior Court in 1776–1782. He was a signer of the Declaration of Independence; a member of the General Court of Massachusetts; and in 1785 was appointed a member of the General Council. He died in Newburyport, Mass., June 24, 1803.

Thorpe, Francis Newton, an American author; born in Swampscott, Mass., April 16, 1857. He was the author of "The Government of the People of the United States"; "The Story of the Constitution"; "The Constitution of the United States with Bibliography," etc.

Thorpe, Rose Hartwick, an American author; born in Mishawaka, Ind., July 18, 1850. She became widely known because of her poem "Curfew Must Not Ring Tonight." Her other publications include "Fred's Dark Days"; "The Chester Girls"; "Ringing Ballads," etc.

Thorwaldsen, Bertel, a Danish sculptor; born at Copenhagen, Nov. 19, 1770; died there, March 24, 1844. A scholarship enabled him to study at Rome, and along the classical lines of Greek art, he became the most renowned sculptor of his age. His chief works are in the Thorwaldsen Museum.

Thothmes III., an Egyptian king of the 18th dynasty; lived about 1600 B. C. and reigned for 54 years. He was famous for his conquests and carved upon the temple walls of Karnak the names of 625 vanquished cities and nations.

Thousand Islands, a group of small islands numbering about 1,800 in the St. Lawrence immediately below Lake Ontario. They belong partly to Canada and partly to the State of New York, and have become a popular summer resort.

Thrace, the ancient name of the Turkish province of Rumelia. It is said to have been peopled by a tribe of Pelasgians. The authentic history of the country commences with the formation of the Greek settlements in the 6th century, B. C. Of these, the principal were Byzantium (675 B. C.), Selymbria, Abdera (560 B. C.), Mesembria, etc.; but their want of union enabled the Thracian chiefs of the interior to preserve their independence. In 513 B. C., Darius, King of Persia, marched through Thrace on his way to punish the European Scythians, and on his return, left Megabazus, with 80,000 men, to subdue the country. In this he partially succeeded, but new disturbances and complications arose between the Persians and Greeks which resulted (480 B. C.) in the famous expedition of Xerxes. The rise of the Macedonian kingdom, under Philip II. (359 B. C.), destroyed the independence of a great part of Thrace. Under the government of Lysimachus, Thracia was incorporated with Macedonia, and became absorbed. On the fall of the Macedonian king-

dom (168 B. C.), it passed into the hands of the Romans, and subsequently shared the vicissitudes of the Roman empire. In 305, it was overrun by Alaric, and in 447, by Attila. In 1353, Amurath obtained possession of all its fortresses, except Constantinople, and it has ever since remained in the hands of the Turks.

Thrasybulus, an Athenian general, who in the time of the Thirty Tyrants, took refuge at Thebes. Having gained some followers, he marched against the usurpers and expelled them. In commemoration of this triumph, a yearly festival was instituted at Athens. Thrasybulus wisely procured the passing of a general amnesty, which decreed that no one but the principals should be punished for the atrocities which had been committed. He subsequently displayed great valor in Thrace, and slew the Lacedæmonian general with his own hand. Thrasybulus fell in a battle with the Aspendians, who were the allies of Sparta, 394 B. C.

Thread, a compound cord consisting of two or more single yarns, doubled and twisted. In the trade it is divided into lace, stocking, and sewing thread. Any fibrous substance, such as cotton or flax, when it is to be woven, is first spun into yarn, which is sometimes called thread. Sewing thread, however, always consists of at least two or more yarns twisted together. In the spinning of yarn the process is the same whether it is to be woven into cloth or twisted into thread. Beginning with the spun yarn the stages in the process of manufacturing a six-cord cotton thread (a very common kind) are: (1) The yarn is doubled and wound on bobbins; (2) the double yarn is then twisted into a two-ply thread; (3) the thread is next rewound on bobbins for the second twist; (4) the thread is twisted a second time on the twisting frame, three two-ply threads being thus formed into a six-cord thread; (5) the thread is rewound on large bobbins, from which it is reeled into hanks for bleaching or dyeing; (6) the bleached or dyed thread is next rewound on bobbins for spooling; (7) spooling — i. e., winding the thread on small bobbins called spools or pirns for use. The spindles of the spooling machine run at a speed of 7,000 revolutions per minute.

Cotton was first used in the manufacture of sewing thread at Pawtucket, R. I., by Samuel Salter in 1794. Flax had always been used everywhere, but as Mrs. Salter was spinning cotton, she noticed the fineness of the fiber, and at once conceived that it would make smooth thread. The idea was at once put into practice.

Threatening, menacing, especially with ulterior designs. By the common law of England to threaten bodily hurt is a civil injury against the person, and pecuniary damages can be recovered for interruption of a man's business through fear of such threats. Any person accusing or threatening to accuse any other person of infamous or other crimes, with the view to extort gain, is guilty of felony. Similar provisions are made against sending or delivering any letter threatening any house, ship, etc., or to wound or maim cattle; sending or delivering any threatening letter demanding any property or valuable. Any person who maliciously sends or delivers, knowing the contents, any letter threatening to kill or murder any person, or to burn or destroy any coal breaker, house, barn, or other building, or any rick or stack of grain or other agricultural produce, in most States is considered guilty of a misdemeanor, and on conviction is liable to fine and imprisonment.

Three Hours' Agony, or **Three Hours' Service,** a devotion practised on Good Friday, from noon till three o'clock, in commemoration of the Passion. It was introduced by Father Messia, S. J., of Lima, about 1730, and reached Rome in 1738. It was introduced into the English Church about 1865, and was rendered legal by the Act of Uniformity Amendment Act (1872).

Three Kings, the name given in Christian legend to the Magi, who came from the East to adore the Infant Jesus (Matt. ii: 1–12). They were probably called kings from Psalm lxxii: 10, which verse is used as an antiphon in the office for Epiphany. According to tradition, their names were Gaspar, Melchoir, and Balthaz-

ar, and on their return to the East they received baptism.

Thrift, in botany, a genus of plants, called also seapink; leaves densely fascicled, linear, with impressed points both above and below; inflorescence a scape, bearing a head of rose-colored, pink, or white flowers, surrounded by a brown, membranous, three-leaved involucre, and intermixed with scales. It is found on seacoasts and on mountains, and is well adapted for edging in gardens.

Throat, the anterior part of the neck of an animal, in which are the œsophagus and windpipe, or the passages for the food and breath.

Throne, the chair used on occasions of state by a king, emperor, or Pope. It is usually raised, and often surmounted with a canopy. The term is also applied to the seat of a bishop in his cathedral church, and is a common metaphor to express sovereign power.

Throop Polytechnic Institute, a co-educational, non-sectarian institution in Pasadena, Cal.; founded in 1891.



SONG THRUSH.

Thrush, in ornithology, the name for any of the Turdidæ. They are universally distributed, and are very highly organized birds, and it is for this reason, perhaps, as well as on account of their omnivorous diet, that they have been able to establish themselves on a number of remote islands. They differ widely in their habits and in their habitats; some are gregarious, others live solitarily or in pairs. The wood thrush is abundant in North America in summer, as far N. as Hudson Bay, retiring to tropical and subtropical regions in winter. It is rather smaller than the song thrush, and very similar to it. Several other species are found in North America.

Thrush, in veterinary surgery, an affection of the horse's frog, appearing as a severe and acute inflammation, which usually proceeds to ulceration, and which is accompanied by a fetid discharge. It is most frequently seen in horses of unsound constitution, and especially appears in stables where the drainage is deficient, and uncleanliness prevails.

Thucydides, historian of the Peloponnesian war; born in the deme Halimus most probably in 471 B. C.; was the son of Olorus and Hegesipyle, and was related to Miltiades and Cimon. It is probable that his literary model was Antiphon, and that he was influenced in his views on philosophy by Anaxagoras. Certain it is that, Athenian as he was, of good family, and resident in the most cultivated community in Greece, he must have known Sophocles, Euripides, Aristophanes, Phidias, Protagoras, Gorgias, and possibly Herodotus and Æschylus. He was further possessed, either by inheritance or by acquisition through marriage, of gold mines in that part of Thrace lying opposite the island of Thasos. We know from himself that he was one of the sufferers from the terrible plague of Athens, and also one of the few who recovered. He held military command, and he had under him an Athenian squadron of seven ships at Thasos, 424 B. C., when he failed to relieve Amphipolis, which fell into the hands of Brasidas. Condemned to death as a traitor, he took refuge in exile and retired to his Thracian estates. His exile enabled him as he tells us, to associate with the Peloponnesians quite as much as with the Athenians; and he probably spent some time also in Sicily, as we may infer from his minute descriptions of Syracuse and its neighborhood. According to his own account, he lived in exile 20 years, and probably returned to Athens after the destruction

of its walls, in 404. How or when he died is unknown; but he did not live long enough to revise book viii. or to bring his history down to the end of the war.

If Herodotus was "the father of history," Thucydides was the first of critical historians. There is hardly a literary production of which posterity has entertained a more uniformly favorable estimate than the history of Thucydides. This high distinction he owes to his undeviating fidelity and impartiality as a narrator; to the masterly concentration of his work, in which he is content to give in a few simple yet vivid expressions the facts which it must have often taken him weeks or even months to collect, sift, and decide upon; to the sagacity of his political and moral observations, in which he shows the keenest insight into the springs of human action and the mental nature of man; and to the unrivaled descriptive power exemplified in his account of the plague of Athens, and of the Athenian expedition to Sicily.

Thug, or Thag, the name given in the N. provinces of India to a member of a fraternity, who looked on murder as the sole means of staying the wrath of the goddess Kali, and derived their principal means of support from the plunder of their victims. In old times, according to Hindu mythology, Kali made war on a race of giants, from every drop of whose blood sprang a demon. These demons multiplied, and at last the goddess created two men to whom she gave handkerchiefs, with which they strangled the infernal beings. There is ground for believing that the murderous sect of thugs is not yet extinct in India. The term "thug" is frequently applied in America to persons of brutal and criminal habits.

Thulstrup, Thure de, an American artist; born in Sweden, in 1848; was first lieutenant and captain in the Franco-Prussian War; took part in the campaigns of the Loire and the East; participated in both battles of Orleans; and engaged in the street fights with the Communists in Paris. He came to the United States in 1872; began his artistic career on the New York "Graphic" in 1873; was connected with the Frank Leslie publishing house in 1876–1880, and in the latter year went to the Harpers. He became widely known as a book and magazine illustrator, especially on military and historical subjects.

Thumb-screw, a former instrument of torture for compressing the thumbs. It was employed in various countries, Scotland in particular; called also thumbikins or thumbkins.

Thunder, the violent report which follows a flash of lightning. It commences the same moment as the flash; but, as the sound travels only at the rate of about 1,100 feet a second, while light does so at the rate of 190,000 miles, the flash of the lightning is the first to be perceived, and thus a means is afforded of calculating the distance of the lightning. The noise of the thunder arises from the disturbance produced in the air by the electric discharge, but why the sound should be so prolonged has been differently explained. The old hypothesis was that the sound was echoed from every precipice, from every building, and from every cloud in the sky. Another is that the lightning itself is a series of discharges, each producing a particular sound according to the distance at which it commences, and the varying densities of the portions of air which it traverses before reaching the ear. A third conjecture is that the noise arises from the zigzag movement of the electric fluid, the air at each salient angle being at its maximum compression.

Thunder Bird, an imaginary bird occurring in the mythology of races of low culture, and personifying thunder or its cause. Among the Caribs, Brazilians, Harvey Islanders, and Karens, Bechuanas, and Basutos, there are legends of a flapping or flashing thunder bird, which seem to translate into myth the thought of thunder and lightning descending from the upper regions of the air, the home of the eagle and the vulture.

Thundering Legion, a Roman legion containing some Christians, which (A. D. 174) fought under Marcus Antoninus against the Marcomanni. The Roman army was shut up in a defile and ready to perish with thirst, when a thunderstorm with heavy rain

relieved them of their distress, and so terrified the enemy that a complete victory was gained. The Christians attributed the deliverance to the prayer which they had just before presented, and considered it miraculous. The heathen also considered the interposition supernatural, but ascribed it to Jupiter, Mercury, or to the power of magic. Also a legion composed of Christian soldiers raised in the Thebais, and led by St. Maurice. The name existed long before it was applied to either of these two legions.

Thurman, Allen Granbery, an American jurist; born in Lynchburg, Va., Nov. 13, 1813; elected to Congress in 1844; chosen judge of the Supreme Court of Ohio in 1851; and was elected United States Senator in 1869 and 1874, where he became leader of the Democratic side. While in Congress he drafted and secured the adoption of the "Thurman Act"; supported the "Bland-Allison Act"; took part in framing the bill providing for the Electoral Commission; and was a member of the commission and a warm defender of its constitutional authority. He served also on the International Monetary Commission in Paris in 1881; was an unsuccessful candidate for the nomination for the vice-presidency in 1876, 1880, and 1884; and in 1888 when again presented for that office was nominated by acclamation, but not elected. He was popularly known as "The Old Roman." He died in Columbus, O., Dec. 12, 1895.

Thursby, Emma, an American concert singer; born in Brooklyn, N. Y., Nov. 17, 1857; studied under Lamperti in Milan, and under Madame Rudersdorff; made a tour of the United States and Canada in 1875 and in England and France in 1878–1879, and was engaged as prima donna in the company of Maurice Strakosch in 1880–1881.

Thursday, the fifth day of the week. The word was originally Thor's day, i. e., the day of Thor, the god of thunder. The Romans similarly called the day dies Jovis = the day of Jove or Jupiter, the god corresponding to the Scandinavian Thor.

Thurston, John Mellen, an American lawyer; born in Montpelier, Vt., Aug. 21, 1847; was United States Senator from Nebraska in 1895–1901, and in 1897 rose to special prominence because of his speeches in the Senate advocating prompt intervention on behalf of Cuba.

Thurston, Robert Henry, an American educator; born in Providence, R. I., Oct. 25, 1839; Assistant Professor of Natural Philosophy at the United States Naval Academy in 1865–1871; Professor of Mechanical Engineering at Stevens Institute of Technology in 1875–1885; and in 1885 was made director of Sibley College at Cornell University. He was also president of the American Society of Mechanical Engineers; United States Commissioner to the Vienna Exposition in 1873; and the inventor of several testing machines, engine governors and other devices. His publications include "Friction and Lubrication," "Materials of Engineering," "History of the Steam Engine," "Manual of the Steam Boiler," about 300 professional and scientific papers, etc. He died in 1903.

Thwaites, Reuben Gold, an American historian; born in Dorchester, Mass., May 15, 1853. He took the post-graduate studies at Yale University in 1874–1875. In 1886 he became secretary of the State Historical Society of Wisconsin, and editor of the "Wisconsin Historical Collections." His publications include "Chronicles of Border Warfare," and "The Jesuit Relations" (73 vols., 1896–1901). He died Oct. 22, 1913.

Thwing, Charles Burton, an American educator; born in Theresa, N. Y., March 4, 1860; was graduated at the Northwestern University in 1888; studied at the University of Bonn in 1893–1894. In 1896–1901 he was Professor of Physics at Knox College; in 1906 engaged in manufacturing. His publications include "An Elementary Physics"; "Color Photography"; etc.

Thwing, Charles Franklin, an American educator; born in New Sharon, Me., Nov. 9, 1853; was graduated at Harvard University in 1876, and at Andover Theological Seminary in 1879; pastor of Congregational churches in 1879–1890. In the latter year he accepted the presidency of

the Western Reserve University and Adelbert College. He is the author of "American Colleges: Their Students and Work"; "God in His World"; etc.

Tiara, the head covering of the ancient Persians; the crown of the ancient Persian kings. These alone had the privilege of wearing the tiara erect; the nobility and priests wore it depressed, or turned down on the fore side. Its form is described variously by different authors, so that it must have varied at different periods. According to Xenophon it was encompassed with the diadem, at least on ceremonial occasions. Also the triple crown worn by the Pope on certain occasions as a sign of his temporal power, of which it is a badge, as the keys are of his spiritual jurisdiction. In its present form the tiara consists of a high cap of cloth of gold, encircled by three coronets, and surmounted by a mound and cross of gold; on each side is a pendant, embroidered and fringed at the end, and covered with crosses of gold. The tiara is placed on the Pope's head at his coronation by the second cardinal deacon in the loggia of St. Peter's, with the words: "Receive the tiara adorned with three crowns, and know that thou art Father of princes and kings, Ruler of the World, and Vicar of our Saviour Jesus Christ." Also a crown, a diadem.

Tibballs, William Huntington, an American educator; born in Union, N. J., Dec. 22, 1848; was graduated at Oberlin College in 1875; Professor of Philosophy and Literature in Parks College for six years; held the same chair at Salt Lake College for three years; and was president of the Utah State Christian Endeavor Union in 1897–1898. He conducted extensive mining operations, and contributed to literary and educational magazines.

Tiber, the chief river of Central Italy, and the most famous in the peninsula. It rises in a dell of the Tuscan Apennines. Its course till it reaches Perugia is S. S. E.; thence, as far as Rome, it pursues, along an irregular zigzag line, a S. direction; but when it enters the plain of the Campagna it curves S. S. W., and enters the Mediterranean by two branches, which enclose the Isola Sacra, or Sacred Isle. Of these the N., the Fiumicino, alone is navigable; the Fiumara is silted up with sand. The entire course of the river is about 260 miles — only 145 direct from source to sea. It is navigable for boats of 50 tons to the confluence of the Nera, 100 miles from its mouth, and small steamers ascend to within 7 miles of that point. The Tiber is supplied mainly by turbid mountain torrents, whence its liability to sudden overflowing of its banks; even the oldest Roman myth, that of Romulus, being inseparably associated with an inundation. Its waters, too, are still discolored with yellow mud, as when Virgil described it.

Tiberius, Claudius Nero Cæsar, a Roman emperor; born Nov. 16, 42 B. C.; was the son of Tiberius Claudius Nero and Livia Drusilla, who became the wife of Octavianus Cæsar in 38 B. C. Tiberius and his brother Drusus were brought up in the household of their stepfather, who from the year 27 B. C. was the Emperor Augustus. Tiberius was adopted by Augustus as his successor in A. D. 4. In the same year he led an army into Germany, marched to the Elbe, and defeated the Sigambri, Bructeri, and Cherusci. The suppression of a revolt in Pannonia and Dalmatia procured for him the honor of a third triumph. He was now sent once more against the Germans. Accompanied by the young Germanicus, he crossed the Rhine, and during the years A. D. 11 and 12 traversed the countries E. of that river. On the death of Augustus, in 14, Tiberius became emperor. He was in his 55th year, and, though beloved by none, he was much respected for the dignity of his demeanor and the reputed severity of his virtue. For some years he affected to take no active part in public affairs, while he gradually destroyed the last remnants of the ancient republic, abolishing the "comitia," and transferring the election of public officers to the subservient senate.

After the death of Germanicus in 19, not without suspicion of poisoning, Tiberius retired to the island of Capreæ to enjoy seclusion, leaving to Ælius Sejanus, commander of the Prætorian guards, the direction of

public affairs. Blinded by the misrepresentations of Sejanus, he agreed to every measure which the latter felt to be conducive to his own ambition, and a long and uniform series of cruelties followed. Awakened at last to the ambitious schemes of his favorite, Tiberius ordered the senate to condemn Sejanus, and the latter, with his family and friends, was put to death in 31. Some time after this Tiberius took up his residence at Misenum, where, as at Capreæ, he plunged himself into the most disgusting debauchery. On March 16, A. D. 37, he fell into a lethargy, and being believed to be dead, Caligula was proclaimed emperor. Tiberius, however, recovered, but he was suffocated in his bed by Macro, to save himself and the young emperor.

Tiberius Constantine, called also Tiberius II., one of the most virtuous emperors of Constantinople, was a native of Thrace, and was brought up at the court of Justinian. He succeeded to the throne in 578, and having suppressed the conspiracy of Sophia, widow of his predecessor, reigned unchallenged till his death, in 582.

Tibet, a dependency of the Chinese Empire, in Central Asia, between China and India; area (1924) 464,000 square miles; pop. about 2,500,000. Tibet is enclosed by the Kuenlun and the Himalaya Mountains. These chains run E. from a mountain knot at the S. extremity of the Pamir highland, and continue to diverge from each other till they reach the meridian of Lhasa, when they drew slightly nearer to the E. and S. E., where Tibet is bounded by ranges which separate it from China and Indo-China.

Tibet is the loftiest region of such extent on the globe. Its table-lands vary in height from 17,000 to 10,000 feet. It has been estimated that their average height is that of the summit of Mont Blanc. The table-lands are loftiest in the W. and N., whence they slope gradually to the S. and E. Bonvalot certified to the existence of volcanoes. The mountain girdle which surrounds Tibet has made it an obstacle across which conquerors from Mongolia could not enter India without making a long detour. Another consequence of these barriers has been that Tibet has remained to the present day the region of the globe least known to geographers.

Tibet lies in the latitudes of Delhi, Cairo, Algiers, and Naples, but its inland position and elevation give it a cold, dry, and extreme climate. On the table-lands at an elevation of 14,000 feet the thermometer in May sinks to 7° F. below zero, and over the whole country an arctic winter prevails for five or six months. There is a very short but excessively hot summer, more especially in the valleys of the Indus and Sanpo, where the high temperature is more oppressive to Europeans than that of the Indian plains. The N. and W. table-lands are without trees. They abound in steppes in which pasture herds of wild animals — yaks, horses, asses, goats, antelopes, etc. The pastures of the S. table-lands supply food to the flocks and herds of a large nomad population. Agriculture is confined chiefly to the valleys of the Indus and Sanpo, the grain chiefly grown being barley; the kitchen herbs and fruits of Europe are also cultivated. Irrigation and terrace cultivation are necessary to secure even scanty crops.

The mineral products of Tibet are of high value, and include gold, silver, iron, copper, zinc, mercury, cobalt, borax, salt, sulphur, etc., but few mines are yet developed.

The Tibetans are good blacksmiths and cutlers; their chief industrial occupation, however, is the preparation of woolen cloth. They are active traders, and large caravans, in which yaks and sheep are the beasts of burden, are constantly traversing the country on their way to the great fairs in Tibet, and the entrepots of the surrounding countries. At one time there was a busy commerce with India, but since Tibet became a Chinese dependency the passes have been closed. In 1894, Yatung on the frontier of India was opened by treaty as a trade mart and the Chinese and Indian governments each stationed an official at that post.

The Tibetans are a Mongolic race, much more closely allied to the Burmese than to the Chinese or Mongols proper. They are broad-shouldered and muscular, and have Mongol features, but not in an exaggerated form.

They are said to be intelligent, but without initiative. The Tibetans by race people nearly the whole of Tibet. A few nomads, Mongols and Turkish tribes, have penetrated into the N. steppes, and Chinese in large numbers have colonized the S. E. In Tibet polyandry is practised, the husbands of one wife being generally brothers. This form of marriage is almost universal among the poor. The rich are polygamists. Both systems check population. In Little Tibet, where monogamy has penetrated from the W. population increases rapidly.

There exist in Tibet two religions: (1) the Bon or Bon-Pa creed, which is a development of Mongol Shamanism, and is the native religion; (2) Lamaism, a form of the Buddhism introduced from India, and which in the Gelugpa sect constitutes the established church. Presumably at the head of the government is the Amban or Imperial Minister Resident at Lhasa, representing the Chinese government. Under him are jongpons and sub-jongpons administering the 53 jongs or prefectines and the 123 sub-jongs into which the four provinces of Tibet are sub-divided. Each jong has two jongpons equal in rank; one a lama or priest and the other a layman. The recognized head of the Lama theocracy, the virtual ruling power of Tibet, is the Grand Lama, usually a youth, supposed to be the reincarnated Buddha. The rule of the Lama theocracy dates from Kublai Khan establishing the Grand Lama of the Sakya sect as head of the Church and State in 1270. The office was confirmed, in 1650, by the Chinese, who in 1720 drove out the invading Sungars, and established a suzerainty. Commercial relations between India and Tibet, established in 1774, were interrupted by the Gurkha invasion of 1790, when the Chinese closed the passes between Tibet and India. In 1894 commercial relations were partially resumed, but violations of the Sikkim Treaty, refusals to negotiate with the Indian government, and intrigues with Russia to abolish the Chinese surzerainty, led in 1903-4 to a British expedition which reached Lhasa after strenuous opposition, and concluded a new treaty, opening up Tibet to modern commerce.

Tibing. See Gibing.

Tibullus, Albius, a Roman elegiac poet; born presumably in Gabii, about 54 B. C. While still a youth he acquired the friendship of the orator, poet, and statesman, M. Valerius Messala, head of a literary coterie only less attractive than that of Mæcenas. As literature was a direct passport to office under government, the already marked poetic gifts of Tibullus procured him a place on the staff of Messala commissioned by Augustus, 30 B. C., to crush a revolt in Aquitania. In this campaign the poet displayed capacity enough to win him distinction and decorations, but these could not countervail his repugnance to a soldier's life. Accordingly the close of the war found him dividing his time between the society of Rome and the retirement of Pedum at the base of the Tusculan and Sabine hills.

Tibullus died in 19 B. C., immediately after Virgil, universally deplored in Rome, and years afterward the subject of a magnificent elegy by Ovid.

Tic Douloureux, a painful affection of a facial nerve, a species of neuralgia. It is characterized by acute pain, attended with convulsive twitchings of the muscles, and continuing from a few minutes to several hours. It occurs on one side of the face, and may be caused by a diseased tooth, by inflammation in the ear passage, by exposure to cold, by dyspepsia, etc.

Tick, a popular name for any individual of the family Ixodidæ. They abound in almost all parts of the world, but chiefly in warm countries. Many of them live in woods, on the branches of trees, but ready to attach themselves to animals, which sometimes suffer greatly from their attacks. The quantity of blood drawn from their hosts by these little pests is by no means inconsiderable, for their skin is so distensible that the gorged parasite increases to many times its original bulk. Though generally confined to some particular species or group of animals, ticks occasionally attack man.

Ticknor, Caroline, an American author; born in Boston, Mass. She wrote stories and articles published in

various magazines; was author of "A Hypocritical Romance and Other Stories," "Miss Belladonna, a Child of Today," and was one of the editors of "The International Library of Famous Literature," "Masterpieces of the World's Literature," and "The World's Great Orations."

Ticknor, George, an American historian; born in Boston, Mass., Aug. 1, 1791. He was graduated at Dartmouth College in 1807. In 1820 he was appointed Professor of Modern Languages and Literature in Harvard University. In 1835 he resigned his professorship, and for the next three years traveled in Europe with his family. In 1849 he published a "History of Spanish Literature," corrected and enlarged editions being subsequently published. It was at once recognized by scholars as a work of value, and has been translated into Spanish and German. After some works of minor interest he produced in 1863 "The Life of William Hickling Prescott," the historian, with whom he had maintained a close friendship. He died in Boston, Jan. 26, 1871.

Ticonderoga, a village in Essex co., N. Y.; on Lake Champlain. Ticonderoga figured prominently during the Colonial and Revolutionary periods. In 1755 the French erected a fort here and named it Carrillon. Two years later Montcalm started from this place with 9,000 men and captured Fort William Henry on Lake George. In 1758 General Abercrombie endeavored to take the French fort, and was repulsed after losing 2,000 men; but in 1759 it fell into the hands of General Amherst together with Crown Point. Both were then enlarged and strengthened at a heavy expense. In 1775 the works were taken by Ethan Allen while weakly garrisoned. Two years later surrendered to General Burgoyne, and after being dismantled was abandoned. Pop. (1930) 3,600.

Ticunas Poison, a poison used for smearing arrows by the Ticunas and other Indian tribes living near the Amazon. When given to animals it produces strong convulsions lasting for hours. It probably contains picrotoxin, like other poisons used for the same purpose, but it has not been accurately investigated.

Tidal Motor, a motive power receiving its energy from the action of tidal waters.

Tide, a regular periodic oscillation to which the surface of the sea at any place is subject. The oscillation takes place about twice a day, the periodic time being, on an average, about 12 hours and 26 minutes. Consequently if high tide occurs at noon one day, it will occur next day some 50 minutes later. This is precisely the interval of time which elapses between two successive meridian passages of the moon; and that there must be some connection between the tides and our satellite was early recognized by astronomers. The explanation, however, was lacking till Newton proved them to be a necessary consequence of the law of gravitation. The phenomenon of the tide is, indeed, a case of perturbations, of exactly the same nature as the irregularities which the action of the sun produces on the motions of the moon. If we compare the attraction of the moon on a particle of the earth's surface with the attraction exerted on the earth as a whole, we readily see that, according as the particle is on the nearer or further side of the earth, the former attraction is greater or less than the latter; and it is to this difference of attraction, to which the waters yield, that the whole phenomenon of tide is due. The nearer waters are driven toward the moon, the further waters away from it. If the earth were spherical and uniformly covered with water, the tendency would be to make the water arrange itself in the form of a spheroid with the longer axis pointing toward the moon; and did the earth always present the same face to the moon, this would be rigorously the case.

Such is the equilibrium theory of tides, as originally given by Newton.

More recently Young and Airy have approached the question as one of wave motion, basing their theory on the motion of waves in canals. Till now we have been regarding the moon as the sole tide-producing agent, but it is evident that the sun must have a similar action, though not so marked because of its much greater distance. It was proved by Newton that the disturbing forces exerted by two bodies

on the same particle are directly as their masses, and inversely as the cubes of their distances; hence the ratio of the disturbing force exerted by the sun to that exerted by the moon 7:16. The principal tidal wave is that caused by the moon, but on it must be superposed that due to the sun. When the sun and moon are in syzygy, at times of new and full moon, their tidal waves will be superposed crest on crest, and the effect will be what is called a spring tide. When they are in quadrature, trough will coincide with crest, the lunar tide will be partially neutralized by the solar tide, and the result will be the so-called neap tide. The average spring tide will be to the average neap tide as $16 + 7 : 16 - 7 = 23 : 9$.

The attempt to establish a complete theory from abstract principles has proved a failure; and the only true method by which to get an insight into the particular laws which govern tidal action at any given place is continued observation. By means of Lord Kelvin's tide gauge a graphical representation of the tidal oscillation at any place can be easily obtained; and by harmonic analysis of the curve, the constituent factors may be easily discovered, and the comparative effects of their several causes estimated. One efficient cause in retarding tides has not been mentioned, namely, fluid friction, which, as first noticed by Kant, must act as a continual brake to the earth in its rotation; and this gradual slackening in the earth's speed of rotation must go on till the day is of the same length as the lunar month, when matters will be as required in the equilibrium theory given above.

Tiedeman, Christopher Gustavus, an American writer on law; born in Charleston, S. C., July 16, 1857; was graduated at the College of Charleston in 1876; and at the Columbia Law School in 1879; was Professor of Law in the University of Missouri for 10 years and held the same chair in New York University for six years. He was author of "The Law of Real Property," "Limitations of Police Powers," etc. Died 1903.

Tientsin, a large city and river port of China, in the province of Chihli, on the right bank of the Peiho; 34 miles from the mouth of the river. It is the port of the city of Peking, from which it is distant 80 miles S. E. The river is generally frozen over from about Dec. 15 to March 15, and the business at other times carried on by means of boats and junks is taken up by sledges, which swarm on the river. By the treaty of Tientsin, signed here in 1858, the port was declared open; and a British consulate was established in January, 1861, while part of the allied troops were still here. In 1881 Tientsin was connected by telegraph with Shanghai (the line extending to Peking); and there is a railway from Tientsin to the mouth of the Peiho, which will ultimately be extended to Shanghai. The imports have an annual value of $2,000,000 or $2,500,000, the exports about $5,000,000. There is also a large and rapidly increasing transit trade with Russia via Siberia. Pop. (1926) 800,000. There was severe fighting at this place at the time of the Boxer troubles in 1900 in which the American troops greatly distinguished themselves.

Tierra del Fuego, an archipelago consisting of a group of several large and numerous small islands, lying off the S. extremity of South America; in lat. 54° S., lon. 70° W.; separated from the continent by the Strait of Magellan. Its extreme S. point is formed by Cape Horn. The principal island, Tierra del Fuego, sometimes known as King Charles South Land, is divided between Chile and Argentine Republic, to the latter of which Staten Island also belongs. All the other islands and islets are included in Chile.

The whole group is mountainous, the high hills of the mainland (Tierra del Fuego) attaining a height of 7,000 feet, the snow line being at an altitude of 4,000 feet above sea-level. There are some dreary plains and a few fertile river valleys, with areas of marshy ground between Useless and St. Sebastian Bays. Toward the N. the plains produce good pasturage, and attempts at sheep farming have been made in the district, the Jesuit missionaries on Dawson Island having a farm with nearly 20,000 sheep and over 6,000 cattle. Forests of beech,

winter's bark, magnolia and cypress cover large areas.

The land of Tierra del Fuego is rapidly rising, and the coast line has advanced 3 kilometers since the date of the surveys of Captains King (1826–1828) and Fitzroy (1831–1836). The rocks are principally volcanic, but sedimentary strata are not uncommon on the principal island, and probably on some others. Granite, syenite, porphyry, quartz, serpentine, trachite, diorite, and sandstone comprise the principal rocks. Some coal, of a poor description, and a little gold have been found. The situation of the islands exposes them to a series of conditions which render their climate the most tempestuous in the world. The prevailing winds are from the W., beginning to blow with the rise of the sun, and increasing in violence till dusk, when a calm may generally be looked for with confidence. During the short summer the winds blow from the N. Settled weather never lasts for more than a fortnight at a time. December, January and February are the warmest months. March is exceedingly boisterous always, and during its course occur the most destructive gales.

The people are savages of a low type, divided into three tribes, the Onas (or Aonas), the Yaghans, and the Alakalufs, the Yaghans being now supposed to be the aborigines. The Onas are tall, the others short and stunted in stature. The charge of cannibalism once brought against them appears to be unfounded. They number about 8,000.

Tiffany, Charles Comfort, an American clergyman; born in Baltimore in 1829; was educated at Dickinson College, Andover Theological Seminary, and the Universities of Halle, Heidelberg and Berlin; ordained in the Episcopal Church in 1866; held charges in Boston and New York in 1867–1890; and became arch-deacon of New York in 1893. Died in 1907

Tiffany, Charles Louis, an American manufacturer; born in Killingly, Conn., Feb. 15, 1812; removed to New York city in 1837, where with J. B. Young he opened a stationery and fancy goods store, from which the house of Tiffany & Co. grew, with branch houses in London and Paris. Mr. Tiffany was one of the founders of the Union League Club and of the New York Society of Fine Arts, and a member of numerous societies. He died in New York city, Feb. 18, 1902.

Tiffany, Francis, an American clergyman; born in Maryland in 1827; was ordained in the Unitarian Church in 1852; and was pastor in West Newton, Mass., in 1865–1882. D. 1908

Tiffany, Louis Comfort, an American artist; born in New York city, Feb. 18, 1848; studied art in New York and Paris; has done considerable decorative work; discovered the "Tiffany Favrile Glass," and some of his designs for stained glass windows have become famous. He was president and art director of the Tiffany Glass and Decorating Company, and a member of many American and foreign art associations.

Tiffany, Louis McLane, an American surgeon; born in Baltimore, Md., Oct. 10, 1844; was graduated at the University of Cambridge, England, in 1866, and at the Medical Department of the University of Maryland, 1868, and afterward practised in Maryland. He was at different times demonstrator of anatomy, Professor of Operative Surgery and Professor of Surgery at the University of Maryland.

Tiflis, the capital of a province of the same name in Asiatic Russia, and chief city in the territory of the Caucasus, lies in a narrow valley on both sides of the Kur, 184 miles E. S. E. of Poti by rail. In its architecture and in the manners of its inhabitants the city presents a singular mixture of Asiatic and European features. The city is the seat of the civil and military authorities of Transcaucasia, and has 42 churches (23 Armenian), 2 mosques, a gymnasium, and several upper schools, a library, a botanic garden, a hospital, and a theater. It has active manufactures of woolens, silks, cottons, armor, and leather, and is the emporium for the important Russian trade with Persia. It is already connected with Teheran by telegraph. Pop. (Est.) 400,000.

Tiger, in zoölogy, the largest and most dangerous of the Felidæ, exceeding the lion slightly in size and far

surpassing him in destructiveness. It is purely Asiatic in its habitat, but is not by any means confined to the hot plains of India, though there it reaches its highest development both of size and coloration. According to Fayrer, the full-grown male Indian tiger is from 9 to 12 and the tigress from 8 to 10 feet from the nose to the tip of the tail, and from 36 to 42 inches high at the shoulder. The ground color of the skin is rufous or tawny yellow, shaded with white on the ventral surface. This is varied with vertical black stripes or elongated ovals and brindlings. On the face and posterior surface of the ears the white markings are peculiarly well developed. The depth of the ground color and the intensity of the black markings vary, according to the age and condition of the animal. In old tigers the ground becomes more tawny, of a lighter shade, and the black markings better defined. The ground coloring is more dusky in young animals.

Though possessed of immense strength and ferocity, the tiger rarely attacks armed men, unless provoked, though often carrying off women and children. When pressed by hunger or enfeebled by age and incapable of dealing with larger prey, like buffaloes, the tiger prowls around villages, and, having once tasted human flesh, becomes a confirmed man eater. In a government report it is stated that "one tigress caused the desertion of 13 villages, and 250 square miles of country were thrown out of cultivation." The jaguar is sometimes called the American tiger.

Tiger Cat, a name of not very definite signification, sometimes given to some of those animals of the family Felidæ which are of middling size, and resemble the tiger in their form or markings, such as the chati, the margay, the ocelot, the serval, etc.

Tiger Flower, a Mexican bulbous plant frequently cultivated in gardens on account of the magnificence of its flowers. The stem is about one foot in height, with sword-shaped leaves. The flowers are large, of a singular form, and very evanescent.

Tiger Lily, a native of China, common in American gardens, having scarlet flowers turned downward, the perianth being reflexed. It is remarkable for having axillary buds on the stem. The bulbs are eaten in China and Japan.

Tiger Shark, a shark common in the Indian Ocean. Young specimens are generally met with close to the shore; but the full-grown fish, from 10 to 15 feet long, frequent the open sea. The color is a yellowish-brown, with black or dark-brown transverse bands or spots, whence the popular name. Called also zebra shark.

Tigert, John James, an American clergyman and author; born in Louisville, Ky., Nov. 25, 1856; was graduated at Vanderbilt University in 1877; Professor of Moral Philosophy there in 1881–1890; became book editor of the Methodist Episcopal Church, South, and editor of the "Methodist Review" in 1894. He was author of "Handbook of Logic," "Systematic Theology," etc.

Tigris, next to the Euphrates, the greatest river of Asiatic Turkey; rises on the S. slope of the Armenian Taurus range in Kurdistan to the S. of Lake Goljik. It has a sinuous course in a S. E. direction, almost parallel to that of the Euphrates, which river it joins at Kurna, after a course of 1,150 miles. Like the Euphrates, the Tigris rises in spring with the melting of the snow on the Armenian Mountains; and during the latter half of May the whole country for over 100 miles between Bagdad and Bussorah, is converted into a lake. The region traversed by the Tigris is one of great historic interest. On its banks are the ruins of the ancient Nineveh (opposite Mosul), Saleucia, and Ctesiphon, and a large region was the scene of great Anglo-Turkish fighting in the World War.

Tilden, Douglas, an American sculptor; born in Chico, Butte co., Cal., May 1, 1860; lost his hearing as a result of scarlet fever and in consequence was educated at the State Institution for the Deaf in Berkeley, Cal., where he was graduated in 1879. Later he took up the study of sculpture and in 1893 was appointed a member of the jury on sculpture at the World's Columbian Exposition in Chicago. He was a member of the Na-

tional Sculpture Society, the New York Art Club, the San Francisco Art Association, etc., and Professor of Sculpture at the Mark Hopkins Art Institute. His works include "Baseball Player," "Tired Boxer," etc.

Tilden, Samuel Jones, an American statesman; born in New Lebanon, N. Y., Feb. 9, 1814; was educated at the University of New York; studied law with Benjamin F. Butler, and was admitted to the bar in 1841; began practice in New York city. During the Civil War he maintained that the struggle with the South could be terminated without resorting to acts not warranted by the Federal Constitution. Mr. Tilden became leader of the Democratic party in New York State in 1868, and in that capacity strenuously opposed the corrupt administration of the Tweed faction. In 1874 he was elected governor of New York, and during his term of office broke up the notorious "canal ring." In 1876 he was nominated for the presidency by the National Democratic Convention. In the election Hayes received 4,033,295 popular votes, and Tilden, 4,284,265. In 1877, on the finding of the Electoral Commission, the presidency was awarded to the Republican candidate by an electoral vote of 185 to 184. Mr. Tilden died in "Greystone," his country-seat, near Yonkers, N. Y., Aug. 4, 1886. The bulk of his fortune, which consisted of several million dollars, was bequeathed to trustees to be used for establishing a great public library in New York city, but his will was contested successfully. An heir relinquished her share of the estate and this was the nucleus of the Tilden Foundation of the New York Public Library.

Tilefish, a brilliantly colored bigheaded, deep-sea food fish, weighing from 10 to 40 pounds, first observed in 1879 off the N. E. coast of the United States. Lives in water 60 to 80 fathoms deep, and is rarely caught.

Tileston, Mary Wilder, an American author; born in Salem, Mass., Aug. 20, 1843. She was author of "Quiet Hours," "Prayers Ancient and Modern," etc.

Tilestone, in geology, the uppermost group of the Silurian period, consisting of a reddish, thin-bedded, slightly micaceous sandstone, which in some places attains a thickness of 1,000 feet.

Tillman, Benjamin Ryan, an American legislator; born in Edgefield co., S. C., Aug. 11, 1847; was educated at Bethany Academy. He was elected Democratic governor of South Carolina in 1890 and 1892; was conspicuous in the Constitutional Convention of South Carolina in 1895; and was elected U. S. Senator for the terms of 1895–1919. On Feb. 22, 1902, during the consideration of the Philippine Tariff Bill, Senator Tillman and his associate, Senator McLaurin, indulged in a personal encounter, for which the president of the Senate directed that the calling of their names should be omitted, a ruling which he subsequently withdrew in order that the Senate itself might pass on the breach of courtesy. On Feb. 28, both Senators were censured by the Senate for their action. Because of the occurrence in the Senate President Roosevelt withdrew from Senator Tillman an official invitation to meet Prince Henry of Prussia, which act became a source of much severe criticism of the President in certain parts of the South. Senator Tillman was the "father" of the State dispensary system, and the founder of the Clemson Agricultural and Mechanical College (for boys) at Fort Hill, and the Winthrop Normal and Industrial College (for girls) at Rock Hill—the two largest institutions of their class in State. D., 1918.

Tillman, Samuel Escue, an American military officer; born near Shelbyville, Tenn., Oct. 2, 1847; was graduated at the United States Military Academy and commissioned 2d lieutenant of artillery in 1869; was assistant Professor of Chemistry, Mineralogy, and Geology in the Military Academy in 1870–1873 and 1879–1880; assistant Professor of Philosophy in 1875–1876; and Professor of Chemistry, Mineralogy, and Geology in 1880–1911; then retired. He was assistant astronomer in the U. S. expedition to Tasmania to observe the transit of Venus in 1874–75; and author of "Essential Principles of Chemistry," "Important Minerals and Rocks," etc.

Tilly, Johann Tserklæs, Count von, one of the most notable generals of the Thirty Years' War; born in the castle of Tilly, Brabant, Belgium, in February, 1559. Maximilian, Duke of Bavaria, appointed him commander of his forces, and in 1620, two years after the beginning of the Thirty Years' War, he utterly routed the Bohemians. During the next period of the contest he defeated in turn the two Protestant leaders. In 1622 he drove from the Palatinate Christian, Duke of Brandenburg, and in August next year defeated him in a three days' engagement at Stadtloo in Munsterchen. In 1625 he led the army of the Catholic League against Christian IV., of Denmark, who commanded the army of Lower Saxony, and defeated him in the battle of Lutter. In May, 1631, Tilly sacked the town of Magdeburg. In September, 1631, Gustavus Adolphus defeated Tilly at Breitenfeld, and again at Rain on the Lech. In both battles Tilly was wounded. He died in Ingolstadt, April 30, 1632.

Tilsit, a town of East Prussia; at the junction of the Tilse with the Memel or Niemen, 53 miles S. E. of Memel. It has a schloss (built 1537), a fine rathhaus, four churches, two hospitals, a gymnasium, a realschule of the first class, and a large barrack. The town is historically interesting as the place where, on a raft in the river, the peace of 1807 was concluded between Napoleon, Alexander, and Friedrich William III., by which the last was deprived of one-half of his dominions, and the Kingdom of Westphalia and the Duchy of Warsaw were established. Pop. about 40,000.

Timber, trees cut down, squared, or capable of being squared, into beams, rafters, boards, planks, etc., to be employed in the construction of houses, ships, etc., or in carpentry, joinery, etc. The term is often used for all kinds of felled and seasoned wood. It is also a general term for growing trees yielding wood suitable for constructive purposes. The chief are fir, pine, oak, ash, elm, beech, sycamore, walnut, chestnut, mahogany, teak, etc.

In the United States there are 300 species of trees, the smallest of which grows to a height of 30 feet. In South America the number is much greater, and India possesses about 900 species of timber trees. The species in England do not exceed 30, and in France or Germany there are only a few more. Yet, though the kinds of wood are so much more limited in European countries, there are almost as few in general use in the United States as in Europe.

In 1925 it was reported that there were 21,922 establishments engaged in the lumber and timber output employing 921,145 wage earners, and paying $978,375,000 for wages, and $1,724,983,000 for raw materials, and yielding products having a combined value of $3,688,552,000.

In 1927 it was estimated that there were 36,935,930,000 board feet produced, this total did not include the output of mills cutting less than 50,000 board feet annually. The exports in this year were 801,868,000 board feet. The principal lumber-producing region is now that of Michigan, Wisconsin, and Minnesota; but here, as in the older States, the forests are being rapidly depleted, and ere long the United States will have to fall back for its chief supply on the Pacific and Gulf States.

Timbuktu, Africa, a town S. of the Sahara Desert, occupied by the French in 1894, connected by telegraph with Algiers in 1906. Pop. 5,100.

Timby, Theodore Ruggles, an American inventor; born in Dover, N. Y., April 5, 1822; invented the revolving turret for the original "monitor," the mole -tower system of defense, the revolving-tower and shield, the "American" turbine water wheel, and the method of firing heavy guns by electricity. Died in 1909.

Time, the general idea of successive existence, or that in which events take place, space being that in which things are contained. Relative time is the sensible measure of any portion of duration, often marked by some phenomenon, as the apparent revolution of the celestial bodies, more especially on an axis. Time is divided into years, of the sun, or the rotation of the earth, months, weeks, days, hours, minutes, seconds; but of these portions the

years and days only are marked by celestial phenomena. The instruments employed for measuring time are clocks, watches, chronometers, hour-glasses, and dials; but the three first are those chiefly used.

Timoleon, a Greek general; born of a noble family at Corinth in the beginning of the 4th century B. C. In 344, when Timoleon was 50 years old, ambassadors from Syracuse arrived at Corinth imploring aid against Dionysius the younger, who was seeking to recover his authority over their city. Timoleon was made leader of the Corinthian expeditionary force, and ultimately made himself master of Syracuse, repelling the efforts of the Carthaginian allies in a great battle at Crimissus (339 B. C.). In six years he succeeded in clearing Sicily of tyrants, and in establishing free democratic constitutions. His work now done, he resigned his power and lived a private citizen profoundly respected, till his death in 337–336. His brilliant successes, his constant good fortune, and the tragic story of his disinterested sacrifices, make Timoleon a unique figure in ancient history. Plutarch and Cornelius Nepos have written his life.

Timothy ("one who honors God"), one of the companions of St. Paul on his missionary travels. Timothy was born either at Lystra or Derbe; his father was a Greek, his mother a Jewess. Both his mother, Eunice, and his grandmother, Lois, were Christians, having probably been converted by St. Paul on his first missionary tour through Lycaonia. Hence Timothy early knew the [Jewish] scriptures, probably with Christian interpretations, but his actual conversion seems to have been effected through the instrumentality of St. Paul, if, indeed, this be the meaning of the phrase "my own son in the faith." His constitution was feeble, sensitive, with a certain tendency to asceticism, yet not free from temptation to "youthful lusts." He was strongly recommended to St. Paul by the Christians at Lystra and Iconium. The apostle therefore chose him as missionary colleague, and had him circumcised for the sake of facilitating his work among the Jews. He thoroughly gained the confidence and affection of St. Paul, and was with him in Macedonia and Corinth (A. D. 52–53); and at Ephesus, from which he was dispatched for special duty to Corinth. Returning, he was with St. Paul when the second epistle to the Corinthians and that to the Romans were penned, as also when he passed through Asia Minor prior to his arrest, and during his imprisonment at Rome (A. D. 61–63). Probably about A. D. 64 he was left in charge of the Ephesian church. In Heb. xiii: 23 his own imprisonment and liberation are recorded. Tradition makes him ultimately suffer martyrdom, either in A. D. 96 or in A. D. 109.

The First Epistle of Paul the Apostle to Timothy.— An epistle addressed by St. Paul to Timothy. Some persons in the Ephesian church had taught, or appeared disposed to teach, a doctrine different from that of the apostle. Paul therefore, on departing from Macedonia, left Timothy behind to restrain these false teachers, pretentious men too much given to profitless "fables and endless geneaologies" (verse 4). Paul charged Timothy to preach the Gospel, defining it as a "faithful saying, and worthy of all acceptation, that Christ Jesus came into the world to save sinners." Various dates have been assigned it; one of the most probable is A. D. 56.

The Second Epistle of Paul the Apostle to Timothy.—An epistle written by St. Paul after he had become a prisoner in Rome in bonds, who had been at least once judicially examined, and been required to make his "answer," a crisis which, however, ended in his being "delivered out of the mouth of the lion." The evidence for the authenticity of the epistle is the same as that for the previous letter. Two dates assigned it are A. D. 63, and July or August A. D. 65. It seems to have been the last of St. Paul's epistles.

Timothy Grass, a hard coarse grass with cylindrical spikes from 2 to 6 inches long. It is used mixed with other grasses for permanent pasture, and grows best in tenacious soils. It is extensively cultivated in North America. Timothy Hanson first recommended it, hence its name. Swine refuse it.

Timrod, Henry, an American poet; born in Charleston, S. C., Dec. 8, 1827. He died in Columbia, S. C., Oct. 6, 1867.

Timur, called also Timur Beg and Timur Lenk (that is, Timur the Lame), and, by corruption, Tamerlane, a celebrated Oriental conqueror, of Mongol or Tartar race; born in the territory of Kesh, near Samarcand, in 1336. His ancestors were chiefs of the district, and Timur by his energy and abilities raised himself to be ruler of all Turkestan (1370). By degrees he conquered Persia, and the whole of Central Asia, and extended his power from the great wall of China to Moscow. He invaded India (1398), which he conquered from the Indus to the mouths of the Ganges, massacring, it is said, on one occasion 100,000 prisoners. On his way from India to meet the forces of Bajazet, the Turkish sultan, he subjugated Bagdad, plundered Aleppo, burned down the greater part of Damascus, and wrested Syria from the Mamelukes, after which he overran Asia Minor with an immense army. Bajazet's army was completely defeated on the plain of Ancyra (Angora), in 1402, and the Sultan was taken prisoner. The conquests of the Tartar now extended from the Irtish and Volga to the Persian Gulf, and from the Ganges to the Grecian Archipelago. He was making mighty preparations for an invasion of China when death arrested his progress at his camp at Otrar, beyond the Sir-Daria, in 1405, and his empire immediately fell to pieces.



TIMOTHY GRASS.

Tin, in chemistry, a white, metallic, easily fusible metal, not much affected by exposure to dry or moist air at ordinary temperatures, but becoming oxidized superficially when heated, burning with a brilliant flame if the temperature be raised sufficiently high.

In metallurgy, tin is a white metal, with a slight yellowish tinge, and a brilliant metallic luster. It is wanting in tenacity, but is extremely malleable at a temperature of 212°. What is ordinarily called tin in domestic language, is sheet-iron covered with a layer of tin. Copper is also very well fitted for being coated with this metal.

For the manufacture of tin plates, the best soft charcoal iron is obliged to be used. After it has been rolled and cut to the requisite size, its surface is made chemically clean by immersion for a few minutes in dilute sulphuric acid. The sheets are then heated to a red heat in a reverberatory furnace, withdrawn, allowed to cool, hammered flat, and passed between polished rollers, and then washed in dilute acid. This preparation is needed to free the surface of the iron from the slighest portion of oxide, to which the tin would not adhere. In order to tin them, they are plunged one by one into a vessel of tallow, from which they are transferred to a bath of tin. From this they are taken after a certain time, allowed to drain, and dipped again. The superfluous tin at the edge of the plate is removed by dipping it in the melted tin once more, and detaching it by giving the plate a sharp blow. The tin and iron form a perfect alloy with each other. The appearance known as moire metallique is given by sponging the surface of the tin with dilute nitro-hydrochloric acid, washed with water, and afterward varnished with plain or colored varnish. Copper is tinned in the same way, but with greater ease, it being so much less difficult to clean the surface of that metal than iron. Tinfoil is made by heating pure tin to the requisite thinness. The alloys of tin are numerous and important. The principal of these are Britannia metal, consisting of equal parts of brass, tin, antimony, and bismuth; pewter, 4 tin, and 1 lead; Queen's metal, 9 tin, and 1 each of antimony, bismuth, and lead; the various solders; bell-metal,

78 copper, 22 tin; bronze, copper, with 4 to 6 per cent. of tin; gun metal, 78 copper and 22 tin; and several others. Speculum metal, used for the mirrors of reflecting telescopes, is a steel-white, hard, brittle alloy, of 1 part of tin and 2 of copper. An amalgam of tin and mercury is used for silvering looking glasses. A sheet of tinfoil is laid on an edged slab of stone carefully levelled, and mercury is poured on it till it forms a layer ⅛ inch thick. Glass is laid down on this, and the table is tilted to let the superfluous mercury run off, weights being gradually placed on the glass to facilitate the operation. Tin ores are met with but in few localities.

Cornwall, Bolivia, Mexico and some parts of Australia, are the only important tin yielding districts. The most celebrated tin mines are those of Cornwall, England, which have been worked uninterruptedly from the earliest historic periods. In the United States, crystals of the oxide of tin have been found in localities of Massachusetts, New Hampshire, New York, New Jersey, Virginia, California, Missouri, and perhaps in other States, but though some of the mines, as those of Missouri and California, seem promising, tin has not been worked profitably. See also TIN PLATE.



THE TINAMOU.

Tinamou, the name given to a genus and family of birds occurring in South America, and allied in some respects to the ostrich and emu. They somewhat resemble a partridge, and vary in size from that of a pheasant down to that of a quail. The great tinamou is about 18 inches long, and inhabits the forests of Guiana.

Tincker, Mary Agnes, an American novelist; born in Ellsworth, Me., July 18, 1833. During part of the Civil War she was a volunteer nurse in Washington; in 1873–1887 she resided in Italy, visiting Spain, France, and England. She wrote: "The House of Yorke"; 'A Winged Word"; "Autumn," etc. She died in 1907.

Tinder, any substance artificially rendered readily ignitable but not inflammable. Before the invention of chemical matches it was the chief means of procuring fire. The tinder, ignited by a spark from a flint, was brought into contact with matches dipped in sulphur. Tinder may be made of half-burnt linen, and of various other substances, such as amadou, touchwood, or German tinder.

Tinning, the art, act, or process of coating other metals with tin for the purpose of protecting them from oxidation or rust. Hollow ware is tinned inside, having been first thoroughly cleaned and heated, by pouring grain tin into the vessel and turning and rolling it about so as to bring it in contact with every part. Powdered rosin is used in the bath to prevent the formation of an oxide, and the surface of the ware is rubbed with cloth or tow to aid the process. In cold tinning an amalgam of tin and mercury is applied to the metal, the mercury being afterward driven off. Bridle bits, stirrups, and other small articles are tinned by immersion. Also, the coating or layer of tin so laid on. Also, canning; packing meat, vegetables, etc., in tins.

Tinoceras, or **Tinotherium,** a genus of mammals now extinct, found in the Eocene, and representing the order Dinocerata. The individuals were all large, some of them nearly equaling the elephants, while the brain was smaller than that of any living or fossil mammal.

Tin Plate. The manufacture of this article forms a branch of the iron trade. The art of tinning plate iron is said to have been invented in Bohemia, about the beginning of the 16th century, though the tinning of copper was known earlier.

The manufacture of tin plates is chiefly carried on in the United States and in South Wales. In 1890 the total exports from Great Britain amounted to 421,797 tons, valued at

$31,807,385; of this quantity 321,109 tons were sent to the United States. By the McKinley tariff of 1890 a high protective duty (2.2 cents per pound; lowered to 1.2; and again increased in 1897) was imposed on tin plates imported into the United States, in order to protect the manufacture there. In 1895 English exports were 366,120 tons, value $21,195,965.

According to the U. S. census on Manufactures in 1914 there were in operation 31 tin plate and terne plate plants, employing $26,847,000 capital and 5,238 wage-earners, paying $57,907,000 for raw material and $3,924,000 in wages, and having an output valued at $68,343,000.

In the fiscal year ended June 30, 1917, the U. S. imports of tin, in bars, blocks, pig, or grain or granulated, largely from the Straits Settlements and the United Kingdom, amounted to 137,576,360 lbs., valued at $54,996,098. There were also imported 6,248 tons of tin ore, valued at $2,809,651, and 17,313,622 lbs. of scrap tin valued at $121,197. All of these imports were duty-free.

The largest production of tin ore in the United States in recent years was in 1914, when the total yield was about 155 short tons, equivalent to 104 tons of metallic tin, valued at $66,560. The only production was in Alaska, and the only production in the United States proper was a few hundred pounds of stream tin, which was taken out on Bear Creek, near Tinton, S. D.

The United States is the greatest user of tin among the nations, and the imports are of course large. In the above-mentioned banner year of production the imports of tin for domestic consumption amounted to 52,919 short tons, valued at $32,943,059 (including 5,389 short tons of scrap tin, valued at $61,440).

The world's annual production is about equal to the quantity delivered to the market. In 1914 it aggregated 120,400 short tons, the largest shipments being from the Straits Settlements, 70,560 short tons; Bolivia, 21,000; Holland, 10,416; Cornwall, 6,720; South Africa, 5,600; China, 2,128; and Australia, 2,016.

Tippecanoe, a river of Indiana, which rises in the N. part of the State, flows W. S. W. and S. 200 miles, and empties into the Wabash 10 miles above Lafayette. It is famous for the battle fought near its mouth, Nov. 7, 1811, in which the Indians, under Tecumseh's brother, the prophet, were defeated by General Harrison.

Tipperary (*Irish Gaelic,* Tiobrad Arann, "the well of the district of Ara"), a market town in the county of the same name; on the Arra, an affluent of the Suir; 24½ miles N. W. of Clonmel and 110 S. W. of Dublin. Lying at the base of the Slievenamuck Mountains, near the center of the Golden Vale, on the direct road from Clonmel to Limerick, it carries on a considerable trade in butter, corn, flour, etc. The daily butter market is said to be next in importance to that of Cork. Tipperary is the headquarters of the Union Agricultural Society, and it has a spacious corn and provision market, in which markets are held on Thursdays and Saturdays. Pop. about 6,000.

Tippoo Sahib, more correctly, Tipu Sultan, Sultan of Mysore, and son of Hyder Ali; born in 1749. On the death of his father he was crowned with little ceremony, returning at once to the head of his army, which was then engaged with the British near Arcot. In 1783 he captured and put to death most of the garrison of Bednur; but news of the peace between France and England having reached his French allies, they retired from active service, and Tippoo ultimately agreed to a treaty (1784) stipulating for the status quo before the war.

During the continuance of this peace he occupied himself in regulating the internal administration of Mysore, sent ambassadors in 1787 to France to stir up a war with Great Britain, and failing in this, at length so far allowed his inveterate hatred of the English to overcome his judgment as to invade (1789) the protected State of Travancore. In the ensuing war (1790–1792) the British, under Colonel Stuart and Lord Cornwallis, were aided by the Mahrattas and the Nizam, who detested their powerful and aggressive neighbor; and though the tactics of the Sultan in laying waste the Carnatic almost to

the very gates of Madras baffled his opponents for a time he was ultimately compelled (1792) to resign one-half of his dominions, pay an indemnity of 3,030 lakhs of rupees, restore all prisoners, and give his two sons as hostages for his fidelity. Nevertheless his secret intrigues in India against the British were almost immediately resumed; another embassy was sent to the French; and the invasion of Egypt by the latter in 1798 and Tippoo's machinations having become known to the governor-general almost simultaneously, it was resolved to punish the perfidious Sultan. Hostilities commenced in March, 1799, and two months after Tippoo was driven from the open field, attacked in his capital of Seringapatam, and after a month's siege slain in the breach at the storming of the fort (May 4). He was buried, during an appalling thunderstorm, in the mausoleum he had built for his father. His government of Mysore after 1792 was most oppressive, yet Tippoo was extremely popular, and was esteemed by the Mohammedans as a martyr.

Tippoo Tib, a famous Arab trader in Central Africa. He accompanied Stanley on the occasion of the latter's second expedition to Africa from Nyangwe to the banks of the Lualaba; in 1887 Stanley appointed him Governor of Stanley Falls Station, a stated salary being guaranteed him, he also assisted Stanley in his search for Emin Bey, 1887-89. He died June, 1905.

Tisdall, Fitzgerald, an American educator; born in New York city, March 15, 1840; was graduated at the College of the City of New York in 1859; Professor of Greek Language and Literature in the College of the City of New York after 1879. He lectured extensively; visited Europe several times; and was a member and councillor of the American Institute of Archæology and a member of the American Philological Association. He died Nov. 11, 1915.

Tisri, in the Jewish calendar, the first month of the civil, and the seventh of the ecclesiastical year. It corresponded to part of our September and October. The Great Day of Atonement and the Feast of Tabernacles fell within its limits. It is also called in I Kings vii: 2, Ethanim.

Tissues, (1) in animal anatomy, the texture or grouping of anatomical elements of the systems of which the organs are composed. Thus in special histology we speak of muscular tissue, or flesh; osseous tissue, or bone; adipose tissue, or fat; cartilaginous tissue, or gristle; pigmentary tissue, or coloring matter seen in the skin, etc.; areolar, cellular, or connective tissue, widely distributed in every part of the body, and serving to bind together and consolidate other parts and tissues. (2) In vegetable anatomy, the minute elementary structures of which the organs of plants are composed. Plant tissues are composed of elementary membrane and elementary fibre, and the principal forms under which they exhibit themselves constitute cellular tissue, fibrous tissue, and vascular tissue.

Tithe, etymologically a 10th, historically a 10th part of the tithable produce of the land paid to the clergy. The payment of tithe to the clergy originated in the recognition of a moral and religious duty. The discharge of this acknowledged obligation acquired the force of custom, then received the sanction of ecclesiastical law, and finally passed into the national jurisprudence of England and other Christian countries.

The first recorded instance of the payment of tithes is the offering of Abraham to Melchisedec, the second precedent is the vow of Jacob at Bethel. The consecration of a fractional portion of the produce of the land to the uses of the ministers of religion formed part of the Mosaic law. The tribe of Levi were maintained from this source, not having lands assigned to them like the other tribes. Neither patriarchal usage, nor precedents of Mosaic law, nor the Levitical economy were binding on Christians; but they doubtless suggested to the clergy the precept, and to the people the practice, of paying tithes to the ministers of religion. In the early part of the nineteenth century, contributions for the support of the clergy, commonly and officially known as tithes, were exacted in Massachusetts. Refusal to pay tithes caused riots in Wales, England, a few years ago.

Titian, or **Tiziano, Vecellio,** one of the most distinguished of the great Italian painters, and head of the Venetian school; born in Pieve de Cadore, in the Carnic Alps, in 1477. In 1511 he was invited to Padua, where he executed three remarkable frescoes still to be seen. In 1512 he completed the unfinished pictures of Giovanni Bellini in the Sala del Gran Consiglio at Venice, and the senate were so pleased that they gave him an important office. In 1514 he painted a portrait of Ariosto at Ferrara, and after his return to Venice he painted an "Assumption of the Virgin" (1516), considered one of the finest pictures in the world; it is now in the Academy of the Fine Arts in Venice. About 1528 he produced his magnificent picture, "The Death of St. Peter the Martyr" unfortunately destroyed by fire in 1867. In 1530 the Emperor Charles V. invited him to Bologna to paint his portrait and execute various other commissions. In 1532 he again painted the emperor's portrait, and he accompanied Charles to Madrid, where he received several honors. He remained three years in Spain, in which country many of his masterpieces are still to be found. In 1545 he visited Rome, where he painted the famous group of Pope Paul III., the Cardinal Farnese, and Duke Ottavio Farnese. He was patronized as warmly by Philip II. as by his father Charles V. Of Titian's private life but little is known. He died of the plague in 1576 aged 99, having painted to the last with almost undiminished powers.

Titicaca, a remarkable lake, in the heart of the Andes; partly in Peru and partly in Bolivia; 12,545 feet above the sea-level. It is 120 miles in length, with an average width of from 50 to 60 miles. The S. portion, measuring 24 by 21 miles, is almost severed from the main body of the lake by a projecting peninsula. The lake discharges at its S. W. extremity by the Desaguadero into the salt Lake Aullagas, which has no known outlet. The lake is deep and stormy, so that ice forms near the shores only. It contains a number of strange fishes, and eight species of marine crustaceans, which seem to indicate that it was once at the sea-level. There are eight inhabitable islands, the largest being Titicaca, which gave its name to the lake, and has an area of 20 square miles. It was the sacred island of the Incas, who laid it out in terraces planted with consecrated maize and flowers, and irrigated by channels supplied from the royal bath at the top. The lake is navigated by steamers, and in 1905-06 power-works were projected to tap the lake and electrify the southern railways of Peru.

Titiens, or Tietjens, Teresa, a German operatic singer; born in Hamburg, Germany, July 18, 1831. She appeared as Lucrezia in her native town in her 16th year, and her subsequent engagements at Frankfurt and Vienna had established her position as the chief lyric artist in Germany before her debut in London, on April 13, 1858. Her success here was so decided that she made that country her future home, and it was the peculiar scene of her triumphs. In the concert room and in oratorio her success was unequivocal. She died in the full maturity of her powers on Oct. 3, 1877.

Title, an appellation; a name. Also, an appellation of dignity, distinction, or preëminence given to persons; as, titles of honor, which are words or phrases belonging to certain persons as their right in consequence of certain dignities being inherent in them or conferred on them; as emperor, king, czar, prince, etc. In the United States there are no titles of distinction save those of professional men, which are conferred by authorized institutions as rewards for distinguished merit.

In law: (1) Property or right of ownership, or the sources of such right, or the facts and events which are the means whereby property is acquired; a party's right to the enjoyment of land or goods, or the means whereby such right has accrued, and by which it is evidenced. (2) The instrument or instruments which are evidence of a right. (3) A heading or indorsement; as, the title of an Act of Congress.

Titmouse, in ornithology, a popular name for any individual of the sub-family Parinæ. They are remarkable for the boldly defined color of

their plumage and their quick, irregular movements, running rapidly along branches in quest of insects, and often clinging thereto with their back downward. They feed not only on insects, but on grain and seeds, and not infrequently kill young and sickly birds with strokes of their stout, strong bill. They are very pugnacious, and the hens show great courage in defense of their nests. The chickadee, so named from its note, is the blackcap titmouse of North America.

Titular Church, a name given to the parish churches of Rome, as distinct from the patriarchal churches, which belonged to the Pope, and from the oratories. Each titular church was under a cardinal priest.

Titus, Flavius Sabinus Vespasianus, a Ruman emperor. He was the 11th of the 12 Cæsars, and the eldest son of Vespasian and Flavia Domitilla; born in Rome, Dec. 30, A. D. 40. He was brought up at the court of Nero and early served with credit as tribune in Germany and Britain, and in Judæa under his father. On Vespasian's elevation to the throne Titus was left to prosecute the Jewish war, which he brought to a close by the capture of Jerusalem after a long siege (70). About this time Titus received the title of Cæsar, and took a share in the work of government. He gave himself up to pleasure, and his attachment to Berenice, the daughter of Herod Agrippa I., offended the Romans. But no sooner had Titus assumed the weight of undivided power (79) than his whole character changed. The first act of his reign was to put a stop to all prosecutions for læsa majestas, and to decree heavy punishments against reformers. He completed the Colosseum and built the baths which bear his name, and lavished his beneficence on the sufferers from the great eruptions of Vesuvius, and the great three days' fire at Rome, followed by pestilence the year after. He died suddenly at his patrimonial villa in the Sabine country, Sept. 13, 81, not without the suspicion that he had been poisoned by his younger brother Domitian.

Titus, a companion of St. Paul, though not mentioned in the Acts of the Apostles. He seems to have been converted by the apostle (Tit. i: 4), probably at Antioch A. D. 50 or 51, and in the same year accompanied him to Jerusalem, and was present at that first council which recognized Gentile converts as part of the Church, and exempted them from the burden of the Mosaic ritual. Paul soon afterward practically carried out the liberty thus accorded by refusing to require Titus, who by birth was a Greek, to be circumcised. Titus was subsequently with Paul at Ephesus (A D. 56), whence the former was sent on a special mission to the Corinthians. When Titus returned (A. D. 57) he found the apostle in Macedonia. Subsequently (probably A. D. 65 or 66) he was left in Crete to arrange the affairs of the Church and "ordain elders in every city." Returning thence to Rome he was dispatched by Paul (A. D. 66 or 67) to Dalmatia. According to tradition Titus returned to his work in Crete, and died a natural death at an advanced age.

The Epistle of Paul to Titus, the third of St. Paul's pastoral epistles, was written to give Titus directions respecting the organization of the Cretan Church. After an introduction, the apostle lays down the qualifications of a scriptural bishop, gives a warning against Judaizers and other false teachers, affords directions as to the special duties of aged men and women, young men and women, servants, and subjects, and social duties, the whole interspersed with evangelical doctrine and precept. He concluded by instructing Titus how to deal with heretics, and asking him to come to Nicopolis, where he (Paul) hopes to winter, and sends salutations. There is a considerable resemblance between some passages in Titus and others in the Epistles to Timothy.

Toad, in zoölogy, the popular name of any species of the family Bufonidæ, which is almost universally distributed, but is rare in the Australian region, one species being found in Celebes and one in Australia. Three species are European. The common American species is more active than the European species, moving principally by leaping. The body is swollen and heavy-looking, covered with a warty skin, head large, flat, and toothless, with a rounded, blunt muzzle. There

is a swelling above the eyes covered with pores, and the parotids are large, thick, and prominent, and secrete an acrid fluid; when handled or irritated these animals can eject a watery fluid from the vent. But neither the secretion from the parotids nor the ejected fluid is harmful to man, and there is little doubt but that its effects on the lower animals have been much exaggerated. The toad has four fingers and five partially webbed toes. Toads are terrestrial, hiding in damp, dark places during the day, and crawling with the head near the ground. They are extremely tenacious of life, and can exist a long time without food.

Tobacco, a very important plant, belonging to the natural order Solanaceæ, or night-shade order. The introduction of the use of tobacco forms a singular chapter in the history of mankind. According to some authorities smoking was practised by the Chinese at a very early date. At the time of the discovery of America, tobacco was in frequent use among the Indians, and the practice of smoking, which had with them a religious character, was common to almost all the tribes. The name tobacco was either derived from the term used in Haiti to designate the pipe, or from Tabaca in Santo Domingo, whence it was introduced into Spain and Portugal in 1559 by a Spaniard. It soon found its way to Paris and Rome, and was first used in the shape of snuff. Smoking is generally supposed to have been introduced into England by Sir Walter Raleigh. It was strongly opposed by both priests and rulers. Pope Urban VIII. and Innocent IX. issued bulls excommunicating such as used snuff in church, and in Turkey smoking was made a capital offense. In the canton of Bern the prohibition of the use of tobacco was put among the 10 commandments immediately after that forbidding adultery. The "Counterblast" or denunciation written by James I. of England is a matter of history. All prohibitions, however, regal or priestly, were of no avail, and tobacco is now the most extensively used luxury on the face of the earth.

The most commonly cultivated tobacco plant (Nicotiana tabacum) is glutinous, and covered with a very short down. A less esteemed species is N. rustica, distinguished by a short yellowish-green corolla. The best Havana cigars are made from the leaves of N. repanda. All the tobacco plants are natives of America, and the chief tobacco-growing country is the United States. The plant was first cultivated in Holland early in the 17th century. The tobacco industry in the United States has had a very rapid and voluminous development in production, manufactures, and commerce.

In 1927 there were 1,577,000 acres given to the cultivation of tobacco, and 1,211,301,000 pounds of leaf tobacco produced, having a value of $266,356,000. Kentucky, N. Carolina, Virginia were the largest producers.

In 1925 it was estimated that there were 2,623 manufacturing establishments engaged in the manufacture of cigars and cigarettes. They employed 132,132 wage earners, paying $111,558,000 for wages and $425,769,000 for raw material and yielding an output valued at $1,091,000.

In 1927 there were 804,556,972 pounds of leaf tobacco used in these manufactures for which was paid a revenue tax of $396,450,041. There were 100,581,773,100 regular size, and 10,512,743 large size cigarettes produced in this year, as well as 6,843,079,639 large size cigars, and 401,135,960 very small cigars. There was also manufactured 390,149,892 pounds of smoking tobacco and snuff.

Tobit, in the Apocrypha, a book generally placed between II Esdras and Judith, and containing 14 chapters. A pious man, Tobit by name, resident in Thisbe in Naphthali, was taken captive by Enemessar (Shalmaneser), King of Assyria, and located in Nineveh. When his countrymen were put to death by the king's order, their bodies were thrown into the streets. Tobit made a practice of burying them. Once, when he had buried a body, and, being ceremonially unclean, was sleeping outside by the wall of his courtyard, "the sparrows muted warm dung" into his eyes and made him blind. In the days of his prosperity he had lent 10 talents of silver to a countryman, Gabael, who lived at Rages in Media. At another Median city, Ecbatana, was a relative of his called Raguel, whose daugh-

ter Sara had been married to seven husbands, all of whom had been killed by Asmodeus, the evil spirit. To recover the lent money, Tobit dispatched his son Tobias, having as his companion a man-servant. The two set out for Rages, taking Ecbatana on the way. As Tobias was bathing in the Tigris, a fish leaped out of the water, attempting to devour him; but he caught his assailant, which was cooked and devoured by the travelers, the heart, the liver, and gall being kept by Tobias, on the advice of his companion, the heart and liver to be smoked for the expulsion of evil spirits from persons possessed, and the gall to remove whiteness in the eye. Arrived at Ecbatana, he married the maiden, smoking out the evil spirit who would have made away with him. During the marriage festivities the companion was dispatched to Rages for the lent money, and obtained it, the two ultimately returning with the bride to Nineveh to Tobit, whose blindness was cured by the gall of the fish. When the time came for paying the servant, he declined all compensation, and revealed himself to be Raphael, one of seven angels of exalted rank and function. Sincere thanksgiving followed to God, who had sent the angel. By direction of Tobit, Tobias removed from Nineveh, the destruction of which had been prophesied by Jonah.

Viewed as a tale designed to commend piety and trust in God, the book of Tobit evinces genius, the plot being well sustained, and some of the scenes, depicting domestic life, being beautifully drawn.

Tobogan, or **Toboggan,** a kind of sled used for sliding down snow-covered slopes. It is simply a piece of birch or basswood, a quarter of an inch thick, from five to eight feet long by one or two broad, bent up in front like the dashboard of a sleigh, and braced by several cross pieces of hard wood a foot apart, and by two round rods, one on each side, on top of the cross pieces, all fastened by catgut to the sleigh. The bend at the bow is strengthened by two cross pieces, and kept in shape by catgut strings at the ends bound to the front cross piece and rod. Grooves are cut on the under side of the tobogan to let the knots sink below the wood. Also a sled to be drawn by dogs over snow.

Tocqueville, Alexis Charles Henri Maurice Clerel de, a French politician; born in Verneuil, July 29, 1805. His father was Herve Louis Francois Joseph Bonaventure Clerel, Comte de Tocqueville (1772–1856), peer of France, politician and historian, and a writer of some merit. The son was sent in 1832 by the French government, along with his friend M. de Beaumont, to the United States to inspect and report on the American prison system. They published a joint work on their return, entitled "Of the Penitentiary System in the United States and its Application in France." This treatise, which was crowned by the Academy, recommends the solitary confinement of prisoners. In 1832 Tocqueville resigned his office under government, and after a brief visit to England, gave himself up to the composition of the first of his two great works, "Democracy in America." This work was received with the favor it deserved; the Academy awarded to it a special prize of 8,000 francs, and a quick succession of honors was bestowed on the author. In 1837 he was appointed chevalier of the Legion of Honor; in 1839 he was chosen by the electors of Valognes as their representative; and in 1841 he was elected member of the Academy. For some years practical politics occupied all his attention. In 1849 he entered the Odilon Barrot Cabinet as minister of foreign affairs, but the coup d'etat of Dec. 2 — to which, as may be imagined, he was strongly opposed — drove him from office. He then occupied himself with "The Old Government and the Revolution" (1856, 7th ed. 1866). This is his greatest work. This work, powerful as it is, was but a fragment of the original design. Tocqueville intended to follow it up by others dealing with the great events in the later history of France. He was engaged at these when he died in Cannes, April 16, 1859.

Tocsin, an alarm bell, or the ringing of a bell for the purpose of giving an alarm. The use of the tocsin, during the troubles of the French Revolution, to assemble the multitudes,

has rendered the word almost proverbial.

Todars, Todawars, or **Tudas,** the name of a singular race of people found in the upper part of the Neilgherries, in Southern India. They are a fine, muscular race, of pastoral habits of life; possess a peculiar, unwritten language of their own; worship the sun; practise polyandry; assert that their ancestors were the aboriginal inhabitants of Hindustan; levy a tithe of one-sixth of the crops of various agricultural tribes, they themselves holding aloof from the culture of the soil.

Toga, the principal outer garment and characteristic national dress of the ancient Romans, made of wool, or silk. The right of wearing it was the exclusive privilege of citizens, its use being forbidden to Peregrini and slaves. It was, moreover, the garb of peace, in contradistinction to the sagum of the soldier. The ordinary mode of wearing it was to throw the whole toga over the left shoulder, leaving one extremity to cover the left arm, and to bring it round the back and under the right arm, which remained at liberty, the second end being carried again over the left shoulder.

Togo, Heihaichiro, a Japanese naval commander; b. Oct. 14, 1847. He received the European part of his professional training in 1873-4, on board the British training-ship Worcester, and at the Royal Naval College, Greenwich, England. In the Chino-Japanese War, 1894-5, he won celebrity when commanding the Naniwa, a cruiser of 3,650 tons, he commenced the war by sinking the Kowshing, a transport vessel flying the British flag, and carrying 1,000 Chinese troops, who, after four hours parley, refused to surrender. In the Russo-Japanese War, 1904. Vice-Admiral Togo was given chief command of the Japanese fleet, and added to his fame by his destructive attacks on the Russian Asiatic fleet, and by his brilliant blockading of Port Arthur. See RUSSO-JAPANESE DISPUTE.

Tokens, pieces of money current by sufferance, and not coined by authority; or coins only nominally of their professed value. In England tokens first came into use in the reign of Henry VIII., owing to the want of authorized coins of value lower than a penny. Stamped tokens of lead, tin, and even leather were issued by vintners, grocers, and other tradesmen during the time of Elizabeth, and were extensively circulated, being readily exchanged for authorized money at the stores where they were issued. A currency of this kind (mostly of copper) was much used in Great Britain during the close of the 18th century, and was used in the United States during the Civil War.

Tokyo, formerly called Yeddo, the capital of Japan, and chief residence of the mikado; on a bay of the same name; on the S. E. coast of Hondo, the largest of the Japanese islands, and connected by rail with Yokohama and Kanagawa. The bulk of the houses are of wood, but there are many new buildings of brick and stone, and an imperial palace has been erected near the center, as also public offices, etc. The greater part of the town is flat, and intersected by numerous canals crossed by bridges. The streets are generally narrow and irregular. Gas has been introduced, and the sanitary arrangements have been improved. Education is well organized, and there are nearly 700 private and elementary schools. Tokyo contains the imperial university, and is the center of the political, commercial, and literary activity of Japan. **Pop.** (1925) 1,995,567.

Toledo, a city and county-seat of Lucas co., O.; on the Maumee river, the Miami and Erie canal; 113 miles W. of Cleveland. The river is here navigable for the largest lake steamers.

Toledo has regular steamboat communication with all ports on the Great Lakes, and the many railroads which touch here give it connection with a vast region. It is therefore an important distributing point for produce and manufactures. It is especially known as a clover seed and soft-coal market. The city has a number of large grain elevators, with a storage capacity of over 5,000,000 bushels. The manufactures include carriages, wagons, pumps, steam engines, agricultural implements, furniture and cabinet ware, boats, bicycles, malt liquors, coffee and spice, flour and grist, lumber products, etc.

It also has flour mills, machine shops, and large shipbuilding interests.

Toledo was early known as the "Miami of the Lakes." Later it became known as the "Lady of the Lakes." Prior to its settlement by the whites the Miami Indians inhabited its site. The place was long a trading post, and it was not till 1794, when Gen. Anthony Wayne won his great victory at Fallen Timbers, that the colonists were enabled to occupy it peaceably. Pop. (1920) 243,164: (1930) 290.718.

Toledo, a famous city of Spain; capital of a province, and long the capital of the whole country; on the N. bank of the Tagus, by which it is encompassed on three sides, 40 miles S. S. W. of Madrid. It is situated on a number of hills, 2,400 feet above sea-level; and the climate, excessively hot in summer, is bitterly cold in winter. In the middle of the city rises the lofty, massive cathedral, surrounded by numerous churches and convents, mostly deserted. The cathedral, built in 1227–1493, on the site of a former mosque (consecrated to Christian uses in 1086, but pulled down to make way for the new church), is a large oblong edifice with semicircular apse, and belongs to the simplest, noblest style of Spanish-Gothic, with a few touches of the florid Gothic, classical, and Saracenic styles. Toledan sword blades, famous since old Roman times, are still made, but outside the city. Pop. (1925) 28,170.

Toleration, the act of tolerating or enduring; allowance of something not wholly approved. Specifically, the recognition of the right of private judgment in matters of faith and worship; the liberty allowed by a government to every individual to hold or publicly teach his own religious opinions, and to worship how, when, and whom he pleases, provided he does not violate thereby the rights of others or infringe laws made for the maintenance of decency, morality, and good order, or for the security of the State. In Article VI. of the Constitution of the United States it is ordained that "No religious test shall ever be required as a qualification to any office or public trust under the United States"; and in Article I., in addition to an amendment of the Constitution, it is further ordained that "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof." Nevertheless many years elapsed before full religious toleration was established by law in all the New England States.

Toleration Act, the name given to a statute of William and Mary, under which freedom of worship was granted to Protestant dissenters from the Church of England, provided they made a declaration against transubstantiation, and took the oaths of allegiance and supremacy. This act has been so amended and extended from time to time that now all dissenters, Roman Catholics, Jews, and all other sects alike enjoy all the privileges of the constitution.

Toll, a tax paid, or duty imposed, for some liberty or privilege or other reasonable consideration; such as (a) the payment claimed by the owners of a port for goods landed or shipped there; (b) the sum charged by the owners of a market or fair for goods brought to be sold there; (c) a fixed charge made by those intrusted with the maintenance of roads, streets, bridges, etc., for the passage of persons, goods, and cattle.

Tolman, Herbert Cushing, an American educator; born in South Scituate, Mass., Nov. 4, 1865; was educated at Yale and Berlin Universities; became Professor of Greek at Vanderbilt University in 1894.

Tolstoy, Count Lyoff (Leo) Nikolayevitch, a Russian novelist; born on the family estate of Yasnaya Polyana, in the province of Tula, Russia, Sept. 9, 1828. He served in the Crimean War, and afterward traveled extensively. In 1861 he took up permanent residence on his country estate. Among his earliest works are: "Detsvo" (Childhood), "Otrchestvo" (Boyhood), and "Iunost" (Youth); also "Cossacks," "Sevastopol," and a number of military sketches. "War and Peace" was published in 1865-1868; "Anna Karenina" in 1875-1878. His peculiar doctrines are promulgated in "My Confession," "In What My Faith Consists," etc.; many of them are forbidden in Russia. His later works are: "The Kreutzer Sonata"; "Death of Ivan Ilyitch"; "Master

and Man." Nearly all have been translated into English and most other modern languages. D. Nov. 20, 1910.

Toltecs, a Mexican race who are supposed to have been supreme in Central America from the 7th to the 11th centuries. They were completely obliterated by the Aztecs and Tezcucans, who held the country when the Spaniards first landed. The latter races were of a martial spirit, but they were indebted for their arts, their civilization, and their religion to their milder predecessors. The Toltecs present striking analogies to the Etruscans, and in a less degree to the Egyptians and Assyrians. They were great builders, and their religion was a mystic system of great complexity, intimately connected with the study of astronomy, and interpreted by a priesthood, who formed an exclusive caste.

Tom, popularly known as Blind Tom, an American musician; born of negro slave parents, near Columbus, Ga., May 25, 1849. He was blind from his birth, and the only sign of intelligence he gave during infancy was an interest in music. When he was four years old he was found one night reproducing on the piano pieces which the young ladies in his master's house had been playing during the day. There is no other instance in musical history, where one so young as Blind Tom was has shown so great an attainment in the power of reproduction and phonetics. Tom made his first appearance in New York, Jan. 15, 1861, and afterward traveled extensively in the United States and Europe, performing astonishing feats on the piano.

Tomahawk, an Indian hatchet or ax used in war and in the chase, not only in hand-to-hand combats, but also by being thrown to a considerable distance so as to strike the object with the sharp edge. The native tomahawks have heads of stone attached by thongs, etc., but steel tomahawks are supplied to the Indians by the governments and traders with whom they deal, and a pipe is usually attached to the poll. A hole is drilled through the bottom of the bowl and the poll of the ax, to meet one passing through the length of the handle. As a nautical term, a poleax. To bury the tomahawk, means to make peace; it being the custom of the Indians to bury the tomahawk during the time of peace; so, to dig up the tomahawk means to go to war, to fall into dispute.

Tomato, or **Love Apple,** a plant of the natural order Solanaceæ. It is one of the genus of several species, all natives of South America, chiefly on the Peruvian side, and is the only species in cultivation in Europe, into which it was taken in 1583. In the United States and other countries in which the summer is warm and prolonged, it has long been cultivated for the excellent qualities of the fruit as an article of diet. Though belonging to a natural order of plants usually regarded with suspicion on account of the powerfully poisonous properties of many of the species comprised in it, it is now recognized as one of the most important and valuable of vegetables grown for human food.

The fruit is cooked in a great variety of ways, broiled or fried by itself, or with meat or other accompaniments; made into soups and sauces; sliced raw, it is an excellent ingredient in salads, and eaten with vinegar and pepper and salt uncooked it is perhaps as wholesome and refreshing as in any other way. Its use in any way as food is considered beneficial in affections of the liver, indigestion, and diarrhœa. The word tomato is derived from the Spanish-American name *tamate,* and the English name love apple has arisen from its supposed aphrodisiac properties. Over a million tons are produced annually in the United States.

Tomb, a monument erected over a grave in order to mark the resting place, and preserve the memory, of the deceased. In early ages, and among Eastern nations, it sometimes became the practice to place the remains of the dead in excavated sepulchers, whose interior was often decorated with painting or otherwise. Where the usage was to burn the dead their bones and ashes were placed in urns in these receptacles. Some of the most remarkable rock tombs were those of Egypt. The rock tombs of Persia and Lycia have imposing architectural facades.

Tome, Jacob, an American philanthropist; born in Manheim town-

ship, York co., Pa., Aug. 13, 1810; went to Port Deposit, Md., in 1833. In 1884 he presented to Dickinson College a valuable building for scientific uses. His largest gift was for the foundation of the Jacob Tome Institute, at Port Deposit, $1,600,000, a sum that was increased by his will to more than $3,500,000. He died in Port Deposit, Md., March 16, 1898.

Tomes, Robert, an American physician and author; born in New York city, March 27, 1817. Besides many contributions to journals and periodicals, he published: "The Bourbon Prince"; "Richard the Lion-Hearted," etc. He died in Brooklyn, N. Y., Aug. 28, 1882.

Tomlinson, Everett Titsworth, an American author; born in Shiloh, N. J., May 23, 1859. He published numerous juvenile stories, including: "The Search for Andrew Field"; "The Boy Soldiers of 1812"; "The House Boat on the St. Lawrence," etc.

Tommy Atkins, a name given to the privates of the British army. It is said to have originated in the custom of making out blanks for military accounts with the name. "I, Tommy Atkins," etc. Kipling has immortalized it in verse.

Tompkins, Charles H., an American military officer; born in Fort Monroe, Va., Sept. 12, 1830; studied at the United States Military Academy; began his active military career in 1856. He was promoted 1st lieutenant in the 2d United States Cavalry in April, 1861. During his service in the defense of Washington he distinguished himself on the night of May 31, 1861, by making one of the first cavalry reconnoissances of the war. At the head of the 5th Cavalry he charged through Fairfax Court House, Va., three times and captured two outposts. In recognition of his gallantry during the war he was brevetted Brigadier-General in March, 1865. He was chief quartermaster of the principal divisions of the army in 1865–1888; was then made chief quartermaster of the Division of the Atlantic; and was retired with rank of colonel, Sept. 12, 1894. Died 1895.

Tompkins, Daniel D., an American statesman; born in Fox Meadows, Westchester co., N. Y., June 21, 1774. He was a member of Congress in 1804–1807, when he resigned to become Judge of the Supreme Court of New York. He was governor in 1807–1817 and Vice-President of the United States in 1817–1825. He was a delegate to the State Constitutional Convention of 1821, contributed money and troops to the national government in the War of 1812, during which he commanded the 3d Military District; and in a message to the New York legislature in 1817, recommended the total abolition of slavery in that State, an act which brought about the passage of the bill against slavery which took effect on July 4, 1827. He died in Staten Island, N. Y., June 11, 1825.

Toner, Joseph Meredith, an American physician; born in Pittsburg, Pa., April 30, 1825; settled in Washington, D. C., in 1855. He was the originator of the American Medical Association Library, founded in Washington in 1868, and made a part of the Smithsonian Institution. In 1882 he presented his library of 26,000 volumes and 18,000 pamphlets to the U. S. government. He died Aug. 1, 1896.

Tonga, or Friendly Islands, a group in the S. Pacific Ocean, forming an archipelago of very considerable extent, and consisting of more than 150 islands, the greater part of which are either mere rocks or shoals, or desert spots. The principal member of the group is Tongatuba or Sacred Tonga. The Tonga Islands were discovered by Tasman in 1643, but were named by Captain Cook. Area, 390 square miles. Pop. (1926 Est.) 27,048.

Tongres, a very ancient town of E. Belgium, on the Jaar river, 12 miles S. W. of Maastrichet; has tanneries and large trade in grain and pigs. Nearby is a mineral spring noted by Pliny. In 498, after it had become a place of importance, Attila spread ruin over it; in 881 the Normans devastated it; and in 1677 it fell into the hands of the French. Pop. (1925 Est.) 13,000.

Tongue, in human anatomy, a muscular organ in the mouth, covered with mucous membrane, the muscular structure rendering it of use in mastication, deglutition, and the articulation of speech, while the mucous mem-

brane, which is endowed with common and tactile sensibility, constitutes it the seat of the sense of taste.

Tongues, Confusion of, the penalty inflicted on the builders of Babel when God so confounded their language that they could not understand each other, though up to that time there had been among them only one language. The result was that the building of the tower was abandoned, and those who had been engaged in its erection were dispersed over various lands (Gen. xi: 1-9).

Tongues, Gift of, a gift bestowed in connection with the Pentecostal descent of the Holy Spirit. When the members of the Church had assembled with one accord on the Jewish day of Pentecost, suddenly a mighty, rushing wind entering, pervaded the building in which they had assembled, and cloven tongues as of fire descended on each, and those on whom they were bestowed began to speak with "other tongues, as the Spirit gave them utterance" — the Parthians, Medes, Elamites, and others, who repaired to the place when news of the miracle reached them, bearing testimony to its reality (Acts ii: 1-21). Four explanations of this mysterious gift have been offered: (1) That on the day of Pentecost the disciples received a supernatural knowledge of all such languages as were needed for their work as evangelists. (2) That the gift consisted in the impression produced on the hearers, and that the words uttered by the disciples in Aramaic were heard by those who listened as in their native speech. (3) That the "tongues" consisted of ecstatic bursts of praise which the disciples might have heard uttered at previous feasts of Pentecost by foreign pilgrims, and were, therefore, simply a supernatural exaltation of memory. (4) That they were cries of ecstatic devotion of no definite significance except to those who uttered them.

Tonkin. See ANAM.

Tonnage, in regard to ships, a measure both of cubical capacity and of dead-weight carrying capability. The term, used by itself, may have reference severally to "builders' old measurement" tonnage (B. O. M.), "register" tonnage, "displacement" tonnage, "freight" tonnage, etc., each of which expressions is more or less current in shipping circles. From very early times in the history of shipping a scale of one sort or other must have been employed to determine the relative capacity or carrying power of different vessels, and in point of fact the term "tonnage" in this connection can be traced back for at least 500 years. In Great Britain the first Act of Parliament dealing with the subject was passed in 1422, a second was introduced in 1694, and a third in 1720, but the application of these was limited to particular classes of ships, or those employed in particular trades.

Tonsilitis, inflammation of one or both of the tonsils, generally extending also to the palate and uvula. It brings with it dryness, pain, and heat of the throat, with difficulty of swallowing, and often ends in abscesses, one at least of which suppurates. It is a common disease in moist variable weather.

Tonsils, in anatomy, two glands, one on each side of the palate between its pillars. They consist of a number of deep mucous follicles surrounded by and deposited in cellular tisue arranged in a somewhat circular form. The chief diseases which affect the tonsils are inflammation and hypertrophy of their substance, or the morbid influence may be specially concentrated on the follicles alone.

Tonsure, in ecclesiology and Church history, the shaving of the crown in a circle, which is a distinguishing mark of clerics in the Roman Church. Most of the mendicant and cloistered orders allow only a narrow strip of hair to grow round the head, all above and below being shaved; the tonsure of secular clerics is small. The tonsure is a necessary preliminary to entering the clerical state, whether secular or religious; in the former case it is conferred by the bishop of the diocese, in the latter by the head of the religious house, if a mitered abbot. It invests the receiver with all the privileges of a cleric, and furnishes a means to distinguish the higher from the lower clergy, as the extent of the tonsure increases with the rank till the priesthood is reached.

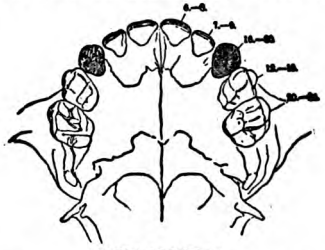
Tontine, a term derived from the name of Lorenzo Tonti, a Neapolitan,

who settled in Paris in Cardinal Mazarin's time, and proposed in 1653 to raise a fund of $125,000,000 for the relief of the national exchequer by means of a financial association, of which the great prize should ultimately accrue to the longest liver. There were to be shares of $1,500. The subscribers were to be divided into 10 classes according to age; and for each class a fixed sum was annually to be divided equally among the members of the class. In this way, while each member should get fair interest from the first on his capital, the profit falling to the survivors would increase as years went on, and the last survivor would receive the whole of the interest due to the class he belonged to. Mazarin and Tonti were both Italians, and regarded in Paris with suspicion, and, in spite of the cardinal's support, the scheme fell through. In 1689–1692 Louis XIV., sorely in need of money, reverted to the plan of the Italian adventurer, and raised a sum of $70,000,000 by a tontine of 40 years' duration. The sole survivor was in 1726 drawing an annuity of $367,500 on his original share of $1,500. The tontine is a lottery of annuities — or compound of lottery and annuity — and was frequently had recourse to in France in the 18th century, with government sanction.

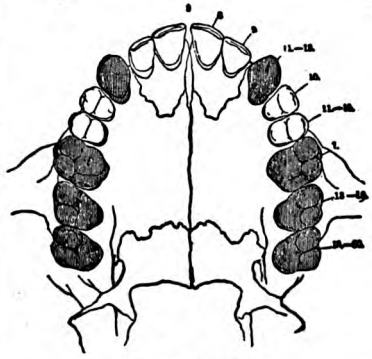
Toombs, Robert, an American statesman; born in Wilkes co., Ga., July 2, 1810; was a Whig member of Congress from Georgia in 1845–1853; and a United States Senator in 1853–1861. He was expelled from the Senate in 1861, and in the same year was elected to the Confederate Congress and also became Confederate Secretary of State. He resigned to become a Brigadier-General in the Confederate army. After the war he resided abroad till 1867. He refused to take the oath of allegiance to the United States government, being to the end of his life bitterly opposed to the reconstruction policy of the government. He died in Washington, Ga., Dec. 15, 1885.

Tooth, one of the hard bodies of the mouth, attached to the skeleton, but not forming part of it, and developed from the dermis or true skin. True teeth consist of one, two, or more tissues differing in their chemical composition and in their microscopical appearances. Dentine, which forms the body of the tooth, and "cement," which forms its outer crust, are always present, the third tissue, the "enamel," when present, being situated between the dentine and cement.

The incisors, or cutting teeth, are situated in front, and possess a single conical root or fang, and a vertical crown bevelled behind, so as to ter-



FIRST TEETH:
The figures refer to months after birth.



SECOND TEETH:
The figures refer to years after birth.

minate in a sharp cutting edge. These teeth are specially fitted, as their name implies, for cutting the food. In man there are two of these incisors in each side of each jaw (in the pre-maxilla). The permanent incisors, molars, and premolars are preceded by a set of deciduous or milk teeth, which are lost before maturity, and replaced by the permanent ones. In herbivorous animals they crop the herbage; in rodents (the rabbit, hare, rat, beaver,

etc.,) these teeth are very much developed, and differ from any other teeth occurring in mammals in this respect, that their growth continues throughout life; and if their length does not constantly increase, it is because their free extremity or edge is worn down by trituration as fast as they grow at the base from their roots.

The canines (so called from their prominence in the dog) come next to the incisors. Their crown is rather conical than wedge-shaped, and their fang sinks more deeply into the jaw than in the case of the incisors. In all carnivorous animals they are largely developed, being obviously formed for tearing the flesh of their prey. In man there is one canine tooth in each half-jaw; and there is never more than this number in any of the lower animals.

The premolars (known also as bicuspids and false molars) come next in order to the canines; they are smaller than the latter, and their crown presents two pyramidal eminences. In man there are two premolars in each half-jaw. Their function more nearly approaches to that of the true molars behind them, than to that of the canines.

The true molars (or multicuspids) are placed most posteriorly. They are remarkable for their comparatively great size, the square form of the upper surface, on which are from three to five elevations or cusps, and for their short root, which is divided into from two to five branches, each of which is perforated at its extremity. They appear first in the permanent set. In man there are three molars in each half-jaw, the posterior one being termed the wisdom tooth, from its being cut the latest; they are especially employed for grinding the food, under the action of the muscles of the lower jaw.

The teeth are so admirably adapted for the special purposes which they are called on to fulfill that it is generally easy, from a careful examination of them, to say to what class of animals they belong, and to draw various conclusions regarding the habits and structure of the class generally. Thus, in carnivorous animals the molars are not grinding teeth, but present sharp cutting edges, and those of the upper and lower jaw overlap each other, resembling a pair of scissors in their action. In insectivorous animals the molars have a tuberculated surface, with conical points and depressions, so arranged as to lock into each other. In frugivorous animals, living on soft fruits, these teeth are provided with rounded tubercles, while in herbivorous animals they have a broad, rough surface, resembling a millstone.

There is also a close connection between the articulation or joint of the lower jaw and the nature of the food used by the animal. Thus, in purely carnivorous animals, in which the teeth simply tear and cut the food no grinding motion is required, and the jaw is capable only of a simple hinge-motion in the vertical plane; while in herbivorous animals the joint is so constructed as to allow of extensive sliding and lateral motion of the lower molar teeth upon the upper. In man both the form of this articulation and the general character of the teeth point to an intermediate position in relation to food, and form a physiological argument for the mixed diet which general custom has decided to be most natural to our species.

Decay of the teeth is rarely met with on smooth surfaces exposed to the friction of food and the direct washings of the saliva. It usually begins in some pit or groove in the enamel or between the teeth, such points forming a lodgment for the development of the organisms. Once the enamel has been penetrated the decay proceeds more rapidly, spreading laterally beneath the as yet healthy enamel and toward the pulp. The more dense the structure of the tooth the more directly does the decay penetrate in the direction of the pulp, though its process is not so rapid and its tendency to spread is less.

Topaz, a mineral, ranked by mineralogists among gems, characterized by having the luster vitreous, transparent to translucent; the color yellow, white, green, blue. It is harder than quartz. It is a silicate of aluminum, in which the oxygen is partly replaced by fluorine. It occurs massive and in crystals. Topazes occur generally in igneous and metamorphic rocks, and in many parts of the world,

as Cornwall, Scotland, Saxony, Siberia, Brazil, etc. The finest varieties are obtained from Brazil and the Ural Mountains.

Topeka, city and capital of Shawnee county and of the State of Kansas; on the Kansas river and the Atchison, Topeka & Santa Fé and other railroads; 67 miles W. of Kansas City; is in a coal-mining region; has railroad shops, flour, planing, and woolen mills, vitrified brick works, meat-packing houses, and foundry, iron, boiler, and machine plants; and besides the State Capitol, contains the State Reform School, State Insane Asylum, Washburn College (Cong.), Kansas Medical College, College of the Sisters of Bethany, and Federal Building. Pop. (1930) 64,120.

Tophet, in Scripture, a place in the immediate vicinity of Jerusalem, considered by Milton to be identical with the valley of Hinnom, but described in Scripture as in that valley. It was S. E. of Jerusalem, and had been prepared of old for some king of Israel, or for Moloch. Whatever its primary design, "high places" were erected there, and it became the chief seat of the worship of Moloch in Palestine. It became a burial ground, ultimately overcrowded with bodies.

Topography, the "description of places," a detailed account of the superficial features of a tract of country, of any natural object such as a hill or river, or of a city, street, or public building. Topography is distinguished from geography in being descriptive and more detailed.

Topography, Military, the minute description of places with special reference to their adaptability to military purposes. It is the business of topographical engineers of the army in time of peace to secure all possible information of countries which may subsequently become theaters of war.

Topolobampo Colony, the name of a coöperative enterprise founded by Americans in 1887 on Topolobampo Bay, Sinaloa, Mexico. They established two settlements, one on the N. shore of the "Strait of Joshua," "Topolobampo," and another, "Vegatom," on the Fuerte river. These town sites occupied respectively about 18,000 and 1,500 acres, and were about 35 miles apart. The colonists surveyed and laid out about 18,000 acres on the N. shore of Topolobampo Bay into avenues, streets, walks, parks, circles, quays, drives, etc., the public areas occupying about 40 per cent. of the whole. The experiment was a failure and the colony was abandoned in 1891. It was an attempt to realize Edward Bellamy's social city, described in "Looking Backward."

Torbert, Alfred Thomas Archimedes, an American military officer, born in Georgetown, Del., July 1, 1833; was graduated at the United States Military Academy in 1855. He was commissioned colonel of the 1st New Jersey regiment in September, 1861, and was promoted captain in the 5th United States Infantry in the same month. In the latter half of 1862 he won distinction in the battles of Manassas and Crampton's Gap; was made Brigadier-General of volunteers on Nov. 29, of that year. In August, 1864, he became chief of cavalry of the middle military division and under Sheridan had command of three divisions. He particularly distinguished himself on Sept. 19, 1864, when he took part in routing the enemy at Winchester, and on Oct. 9, won the cavalry battle at Tom's river. On Dec. 22 and 23 he had command at Liberty Mills and Gordonsville. In March, 1865, he was brevetted Major-General, U. S. A. for gallantry during the war. He served as consul-general to Paris in 1873–1878. He was drowned Sept. 30, 1880, while a passenger on the steamer "Vera Cruz," which foundered off the coast of Florida, while on her way to Mexico.

Torbert, John Bryant, an American topographic draughtsman; born in Washington, D. C., May 8, 1867; was graduated at the Law Department of Columbia University in 1888; was admitted to the practice in the Supreme Court of the District of Columbia in 1889. He subsequently became eminent as a draughtsman; was engaged in the U. S. Geological Survey in 1886–93; in the topographic office of the Postoffice Department in 1893–1908; and again in the U. S. Geological Survey from 1908. He became identified with the Geological Society of Washington and the National Geographical Society.

Tornado, a whirlwind, usually coming on suddenly, continuing but a brief period and covering only a small area. It is generally accompanied by rain, lightning, and thunder. It is of the same type of storm as a cyclone, but more local, covering a smaller area, and generally less violent, though still sufficiently so to be highly dangerous. The term tornado is used specifically of rotating or spiral storms in the South Indian Ocean, and those on the coasts of Africa and North America.

Tornado Alarm, a barometer which automatically sounds an alarm when there is a sudden change of atmospheric pressure, such as occurs in advance of a tornado, cyclone, or wind storm. This alarm is given some two minutes before the first blasts of a storm occur. Ordinary storms have no effect at all on the apparatus.

Tornos, Alberto de, an American educator; born in Carinena, Spain, April 9, 1821; settled in Porto Rico in 1845 and served there as director of the seminary of teachers. He removed to the United States in 1848, and was Professor of Languages at Spring Hill College, Ala., in 1848–1851. Later he accepted the chair of languages at the University of Louisiana, where he remained for many years. He died in New York city, March 22, 1887.

Toronto, a city and capital of the province of Ontario, Canada; on Lake Ontario. Its site is low, but rises gently from the water's edge to a height of about 100 feet. The bay of Toronto, an arm of Lake Ontario, on the S. of the city, affords a commodious and excellent harbor, capable of receiving the largest lake vessels.

Toronto has various manufacturing interests, including several engineering plants and iron foundries, soap works, an immense distillery, a number of breweries, rolling mills, car shops, tanneries, carriage factories, machine shops, cabinet factories, spice mills, car wheel works, pork packing plants, boot and shoe establishments, sash and door, and sewing machine factories, etc. The city has large facilities for an extensive lake traffic. There is regular steamboat connection with all lake ports as well as those on the St. Lawrence river, making the city one of commercial importance.

Toronto was founded in 1794 by Governor Simcoe. The town was captured in 1813 by the Americans under General Pike, who was killed during the attack. A great fire Apr. 19, 1904, destroyed $10,000,000 of property. Pop., city municipality (1930 Est.) 621,596.

Torpedo, a case filled with dynamite, gun cotton, or other high explosive, that may be exploded at the will of the controlling party, or land, in the air, or in the water, or by contact with the enemy's vessel. When torpedoes are of the movable kind they are called automobile torpedoes; those which are anchored or stationary are called mines, and may be either on land or in the water. When torpedoes are thrown through the air they are called aerial torpedoes.

The highest development of the torpedo was made in the World War, both for use on large warships and in the new form of torpedo boats, which came to be known specifically as submarines and U-boats. In the latter use, under the ruthless system devised and promoted by Admiral von Tirpitz, of the German navy, the torpedo was responsible for the destruction of an enormous amount of shipping, with the loss of cargoes valued at a vast sum of money, and an appalling loss of human lives.

As the war progressed the belligerent and neutral maritime nations were thus forced to provide counter means of protection for their shipping, and as a result there gradually came into use a considerable variety in type of this terrible weapon. For their own protection, the belligerent nations observed the most guarded secrecy in the fabrication and handling of their torpedoes; consequently the world knew little, if anything of the actual point of development reached.

Prior to the World War the Whitehead torpedo had been adopted most generally by maritime nations. This is a cigar-shaped projectile with a little propeller at one end. The shell or case is of metal, from 15 to 25 feet long and from 8 to 15 inches in diameter. It is divided into three compartments. The first contains the high explosive. The middle compartment is a strong air chamber with air under a

pressure of 1,000 to 1,500 pounds to the square inch. The third or aft compartment contains the propelling apparatus, which is run by the air from the second. These torpedoes are shot from tubes either forward, aft or midships of a war vessel by means of compressed air. They travel with the velocity of 20 to 30 knots an hour for about 800 yards. The torpedo is exploded by its impact against the sides of a ship. From 1877, when this torpedo first came into notice, till 1898, when the Spanish-American War broke out, there were only 12 instances where it was employed in actual warfare. In the Russo-Japanese War in 1904, they were employed by both sides, causing great destruction.

Other types of torpedoes are the Sims-Edison, the Victoria, the Patric, and the Nordenfeldt. To protect ships from torpedoes, an early plan, considered the most effective, consisted of nets made of heavy metal which are suspended on booms from the ship's side when she is at anchor. When she is moving she throws out her own torpedoes which explode those in the channel ahead. Later plans include an electrical device suspended from a ship's side in the water, which gives warning of the near presence of a submarine.

Torpedo-boat Destroyer, a torpedo boat of a most formidable kind, designed for the destruction of ordinary torpedo boats. The destroyers are usually armed with one 12-pounder gun and from three to five 6-pounder guns, besides their equipment of torpedoes, and carry a crew of four officers and about 40 men. They are capable of 30 knots an hour, and as they carry from 70 to 100 tons of coal, can make a voyage of 1,300 to 1,500 miles without recoaling.

Torque, in archæology, a twisted collar of gold, or other metal, worn around the neck, in ancient times by the people of Asia and the N. of Europe, and apparently forming a great part of the wealth of the wearer. Among the ancient Gauls gold torques appear to have been so abundant that about 223 B. C. Flaminius Nepos erected to Jupiter a golden trophy made from the torques of the conquered Gauls.



TORQUE.

Torrens, William Erskine, an American promoter; born in New York city, July 15, 1870. He made a study of manufacturing methods and mill finance. In 1896 he was made foreign commissioner to South America for the National Association of Manufacturers of the United States, and in 1897–1899 was a special commissioner for the same to foreign countries. He traveled in every country of the world studying the opportunities for introducing American manufactures. He died June 20, 1914.

Torrens' Land System, a plan of land transfer drawn up by Sir Robert Torrens, and by him put in operation in Australia. It is now used in all of the Australian States and in several Canadian provinces, and has been attempted in various parts of the United States. Its object is to make the transfer of land as simple as that of bank stock, and render the title of the holder thereof as free from danger or difficulty. A land registry is established where all land transactions are registered. A title may be registered as absolute or possessory; if absolute, the title must be approved by the master of titles before the ownership can be registered in fee simple. The first registration of a person as owner with absolute title will vest in that person an estate in fee simple in the land, subject to any incumbrances that may be entered on the register. If a possessory title is required, the applicant is registered as owner on giving such evidence of title as may be prescribed. Under specific conditions a qualified title also is given.

Torrey, Bradford, an American author; born in Weymouth, Mass., Oct. 9, 1843. He was educated in the public schools, taught two years, then entered business in Boston. In

1886 he became assistant editor of the "Youth's Companion." He was a close student of birds, and wrote largely on this subject for the magazines. He died Oct. 6, 1912.

Torrey, John, an American botanist; born in New York city, Aug. 15, 1796; was graduated at the College of Physicians and Surgeons; practised in New York city, devoting his leisure principally to the study of botany. He was assistant surgeon in the United States army, and acting Professor of Geology, Mineralogy, and Chemistry at the United States Military Academy in 1824–1828; and Professor of Chemistry at Princeton College in 1830–1854. He was one of the founders of the New York Academy of Science (under the name of the New York Lyceum of Natural History) in 1817, and president of the Torrey Botanical Club in 1824–1826 and in 1838. When the Geological Survey of New York was organized in 1836 he was made botanist, and held that post for several years. In 1860 he presented his herbarium, containing about 50,000 specimens, to Columbia College. He died in New York city March 10, 1873.

Torrey, Joseph, an American clergyman; born in Rowley, Mass., Feb. 2, 1797; was graduated at Dartmouth College in 1816 and at the Andover Theological Seminary in 1819. He was Professor of Greek and Latin in the University of Vermont in 1827–1842 and of Philosophy in 1842–1867, and was president in 1862–1866. He died Nov. 26, 1867.

Torrington, a borough in town of same name in Litchfield county, Conn.; on the Naugatuck river and the New York, New Haven & Hartford railroad; 28 miles W. by N. of Hartford; is chiefly engaged in the manufacture of woolen, brass, and plated goods, needles, bicycles, and machinery. Population (1930) town, 26,040.

Torsion, in mechanics, the force with which a body, as a thread, wire, or slender rod, resists a twist, or the force with which it tends to return to its original state on being twisted. The limits of torsion within which the body will return to its original state depend on its elasticity, and the force with which it recovers its natural state is termed elasticity of torsion.

In surgery, the twisting of the cut end of a small artery in a wound or after an operation, for the purpose of checking hemorrhage. The bleeding vessel is seized by an instrument called torsion forceps, drawn out for about a quarter of an inch, and then twisted round several times.

Tortoise, in the wider sense, are sluggish reptiles, long-lived, and extremely tenacious of life under adverse surroundings, and have survived from remote antiquity while higher animal types, formerly contemporaneous with them, have become extinct, and have been succeeded by very different forms. They have an osseous exoskeleton, which is combined with the endoskeleton to form a kind of bony case or box in which the body of the animal is inclosed, and which is covered by a coriaceous skin, or, more usually, by horny epidermic plates. All the bones of the skull except the lower jaw and the hyoid bone are anchylosed. There are no teeth, and the jaws are cased in horn, so as to form a kind of beak. Tongue thick, and fleshy; heart three-chambered, ventricular septum imperfect. The lungs are voluminous, and respiration is effected by swallowing air. All will pass prolonged periods without food, and will live and move for months after the removal of the entire brain.

The most familiar example of true or land tortoises is the dry land terrapin of the Southern States. Like all the members of the family, it has a buckler covering its back, and another beneath the abdomen, which together are called the shell; they are united and solid, and have openings in front and behind for the neck, limbs, and tail. The tortoise crawls very slowly, withdrawing its head and limbs within the shell when alarmed, and remaining passive till the danger has passed. It is found in the countries bordering on the Mediterranean, and is said to range as far N. as Switzerland and the S. of France. It is about 12 inches long; the scales are granulated in the center, streaked on the margins, and spotted or marbled with black and yellow. But the most interesting forms are gigantic tortoises formerly

found in great numbers in the Mascarene and Galapagos Islands. When discovered these islands were uninhabited by man or any large wild animal; the tortoises therefore enjoyed perfect security, and this, joined to their extraordinary longevity, accounts for their enormous size and their vast number. Five species of this group are known, and two of them, the gigantic land tortoise of Aldabra, and the Abingdon Island tortoise, grow to enormous size. A specimen of the first named weighed 870 pounds, and though known to be more than 80 years old, was still growing at the time of its death.

In military terms, a method of defense, used by the ancients, formed by the troops arranging themselves in close order and placing their bucklers over their heads, making a cover resembling a tortoise shell; a testudo.

Tortoiseshell, a popular name for the partial or entire outside covering of the tortoise and other allied chelonians. It is in the form of thin plates, united together at their edges, and corresponding, to a certain extent, with the underlying bones of the shell. The number, size, position, coloring, and ornamentation of these plates differ greatly even in genera and species. Also the name given to the horny epidermic plates of the hawk's-bill turtle. The largest of these plates are about 18 inches long by 6 broad, and rarely exceed one-eighth of an inch in thickness. Tortoiseshell is semi-transparent, and mottled with various shades of yellow and brownish-red. Its value depends on the brightness and form of the markings. Tortoiseshell is used for making combs, snuff boxes, and many fancy articles; as a material for inlaying ornamental furniture; as a veneer, and as a ground substance in which the precious metals and mother-of-pearl are inlaid.

Tortoiseshell Butterfly, the name given to two butterflies. The small tortoiseshell, one of the commonest of butterflies, is of a bright red-brown, and has on its costal margin three large black spots, beyond the third of which is a white one. The space between the first and third spots is yellow. The large tortoiseshell, the larva of which feeds on the elm, is much rarer. It is deep fulvous, with a broad, dark border. It has no white spot on the costa of the fore wings.

Torture, the infliction of pain. It has been largely used in many countries as a judicial instrument for extracting evidence from unwilling witnesses, or confessions from accused persons, and in the despotisms of the East is still so used; the callousness of torturers and tortured being almost equally remarkable. In ancient Athens slaves were regularly examined by torture. Under the Roman republic only slaves could be tortured; under the empire, torture, besides being much used in examining slaves, was occasionally inflicted even on freemen, to extract evidence of the crime of læsa majestas. Cicero and other enlightened Romans wholly condemned its use. Till the 13th century torture seems to have been unknown to the canon law; about that period the Roman treason law began to be adapted to heresy, the notions on which the ordeal was based contributing to promote its use. At a later period torture came to be largely employed by the Inquisition, and it was only in 1816 that it was prohibited by a papal bull. Its use was universal in the witchcraft trials, and accounts for the strange uniformity in confessions.

American laws do not permit torture in any form, but the victims of lynching are sometimes horribly tortured, and the infliction of torture is common in Spanish America. In China torture is an essential part of the penal system.

Tory, a political party name of Irish origin, first used in England about 1679, applied originally to Irish Revolutionary Catholic outlaws, and then generally to those who refused to concur in the scheme to exclude James II. from the throne. The nickname, like its contemporaneous opposite, Whig, in coming into popular use became much less strict in its application, till at last it came simply to signify an adherent of that political party in the State who disapproved of change in the ancient constitution, and who supported the claims and authority of the king, church, and aristocracy, while their opponents, the Whigs, were in favor of more or less radical changes, and supported the claims of the democracy. In modern

times the term has to some extent been supplanted by Conservative.

Totem, a rude picture of some natural object, as of a bird or a beast, used by the American Indians as a symbol and designation of a family or tribe. A similar practice has been found to prevail among other savage peoples, and some theorists have given it a very wide extension on purely conjectural grounds.

Totleben, or Todleben, Franz Eduard Ivanovitch, Count, a Russian general and military engineer; born 1818; died 1844. After leaving the schools of Riga he entered the College of Engineers at St. Petersburg, and served against the Circassians in 1848. In 1854 he took the chief part in the defence of Sebastopol, and after the peace of 1856 wrote a "Narrative of the War in the Crimea." During the Russo-Turkish War, Totleben was sent (in 1877) to reduce Plevna. The place was soon invested, and Osman Pasha, the Turkish commander, was compelled to surrender at discretion. For his services Totleben was created a count.

Tottel, Richard, an early English publisher; born about 1525; died in 1594. He became a member of the Stationers' Company, was the compiler of the famous "Tottel's Miscellany," and published many works of bibliographical importance. Among them are More's "Dialogue of Comfort" (1552); Lydgate's "Fall of Princes" (1554); and Hawes' "Pastime of Pleasure" (1555).

Totten, Charles Adelle Lewis, an American military officer; born in New London, Conn., Feb. 3, 1851. He was a graduate of the United States Military Academy, and for a number of years Professor of Military Tactics at Yale University. D. 1908.

Totten, Joseph Gilbert, an American military officer; born in New Haven, Conn., Aug. 23, 1788; was graduated at the United States Military Academy in 1805 and commissioned 2d lieutenant of engineers. In 1808-1812 he had supervision of the construction of Castle William and Fort Clinton in New York harbor. He was chief engineer of the army on the Niagara frontier during the War of 1812. In recognition of his service at Plattsburg in 1814 he was promoted lieutenant-colonel, and chief engineer of the United States army in 1838. About the same time he became supervisor and inspector of the United States Military Academy and discharged the latter duties till his death. When the war with Mexico broke out he was given charge of the engineering operations, and planned the siege of Vera Cruz, in recognition of which he was brevetted Brigadier-General. After the outbreak of the Civil War he was chief of the engineer bureau in Washington. He died in Washington, D. C., April 22, 1864.

Toucan, in ornithology, the popular name of any bird of the genus Rhamphastos. They are all natives of tropical America, and are easily distinguished by their enormous bill, irregularly toothed along the margin of the mandibles. All the species live in pairs in the shade of the forests, occasionally congregating in small par-



THE TOUCAN.

ties, but never approaching the human habitations. In the true toucans the ground color of the plumage is generally black; the throat, breast, and rump adorned with white, yellow, and red; the body is short and thick; tail rounded or even, varying in length in the different species, and capable of being turned up over the back when the bird goes to roost. They are easily tamed, and bear confinement well, even in cold climates.

Toucey, Isaac, an American statesman; born at Newton, Conn., in 1796; died in 1869. He was educated for the profession of barrister, and was admitted to the bar at Hartford in 1818. He held several state appointments from 1822 to 1844, and in 1846 was elected Governor of Connecticut. In 1848-49 he was Attorney-General of the United States; from 1852-57 was United States Senator, and became Secretary of War under President Buchanan. He was accused of sympathy with the South during the Civil War by dispersing the ships of the United States Navy among distant stations.

Touch, in fine arts, the peculiar handling usual to an artist, and by which his work may be known. In music, the resistance made to the fingers by the keys of a pianoforte or organ. Also, the peculiar manner in which a player presses the keyboard, whether light, pearly, heavy, clumsy, firm, etc. In obstetrics, the examination of the mouth of the womb by actual contact of the hand or fingers.

In physiology, the sense through which man takes cognizance of the palpable properties of bodies. In a wide application, it is sometimes called the general sense, because by it we become conscious of all sensory impressions which are not the objects of smell, sight, taste, or hearing, which are called the special senses; even these, however, are held by modern biologists to be highly specialized forms of touch, which is often called the "mother of all the senses." In a more limited application, touch is applied to that modification of general sensibility which is restricted to the tegumentary surface or to some special portion of it, and which serves to convey definite ideas as to the form, size, number, weight, temperature, hardness, softness, etc., of objects brought within its cognizance. These sensations are received by the terminations of the cutaneous nerves, and thence conveyed to the brain. The sense of touch is distributed over the surface of the body, but is much more acute in some parts than in others, e. g., in the hand. It is also capable of great improvement and development; and the blind, who have to depend largely on the sense of touch for guidance, acquire extraordinarily delicate and accurate powers of perception with the fingers; difference of form, size, consistence, and other characters, being readily recognized that are quite inappreciable to those who possess good vision.

Touchstone, a variety of extremely compact siliceous schist, used for ascertaining the purity of gold and silver. Known also as black jasper and basanite. It was called Lydian stone, or lapis Lydia, by the ancients, because found in Lydia in Asia Minor. A series of needles (called touch-needles are used for comparison with the article to be tested. When the color of the streak produced by the needle and the trinket on the stone is the same, the quantity of alloy is supposed to be similar.

Toul, a town of France, Department of Meurthe-et-Moselle, on the Moselle, 12 miles W. of Nancy. It is strongly fortified, and has a fine Gothic cathedral, completed in the 15th century. Toul was taken in the Franco-German War after a siege of five weeks, Sept. 23, 1870. Immediately after that war, in the revision of the frontier defenses of France, Toul was made the most formidable of all the new fortresses of the Meuse and Moselle, and the city was connected with the fortress of Verdun by the "Meuse line" of barrier forts. Pop. (1926) 20,118. See APPENDIX: *World War.*

Toulon, a French naval arsenal of the first class, in the department of Var; beautifully situated on a deep inlet of the Mediterranean, formed by the peninsula of Sepet; 40 miles S. E. of Marseilles. It is built at the foot of the Pharon Hills, which protect the city on the N., and are partly covered with fine forests. Defended by a strong citadel, girt with a double-bastioned wall, and surrounded by some 12 forts and redoubts, it is the principal naval station of France.

Toulouse, a city of France, the capital anciently of Languedec, and now of the Department of Haute-Garonne; 160 miles S. E. of Bordeaux and 466 S. by W. of Paris. It is situated in a broad and pleasant plain, on the right bank of the Garonne River. The city, with the exception of the S. faubourg, is not par-

ticularly handsome, nor has it many fine public buildings. Toulouse manufactures engines, tobacco, brandy, etc. Pop. (1926) 184,441.

Tourcoing, a town of France, Department of Nord; on the Belgian frontier, 8 miles N. E. of Lille; is practically a part of Roubaix, with which it constitutes one of the chief textile centers of France. In 1794 the Republican army gained a decisive victory over the Austrians here. Pop. (1926) 81,379.

Tourgee, Albion Winegar, an American jurist and author; born in Williamsfield, O., May 2, 1838; was graduated at Rochester University, N. Y., in 1862; admitted to the bar, 1864; served in the Civil War in the Union army, and was wounded on two occasions; at the close of the war began the practice of law at Greensboro, N. C. In 1868 he became judge of the Superior Court of North Carolina. Besides compiling "A Code of Civil Procedure for North Carolina," he wrote "A Fool's Errand"; "Bricks Without Straw"; etc. In 1897 he was appointed U. S. consul at Bordeaux, France. He died May 21, 1905.

Tourgee, Eben, an American musician; born in Warwick, R. I., June 1, 1834. He established a musical institute in East Greenwich in 1859; studied in Europe in 1863; and on his return in 1864 founded a conservatory in Providence, R. I., which, on its removal to Boston, Mass., in 1867, became the New England Conservatory of Music. In 1872, on the foundation of the College of Music of Boston University, he became its dean. He was also director of the 20,000 singers forming the chorus of the Peace Jubilee in 1874, and the organizer and leader of the large choir of the Music Hall Society in 1876. Died in Boston, Mass., April 12, 1891.

Tourmanin, an ancient and now ruined town of Central Syria, notable for a curious assemblage of buildings comprising a church, and an immense structure which seems to have been an ecclesiastical hostelry for lodging pilgrims. The church, restored from a careful study of the surviving portions, follows the general plan and arrangement of most Syrian churches of the 5th century. The facade has an imposing character, while the disposition of the lines gives to it a picturesque effect.

Tournai, a town in the Belgian Province of Hainault; on the Scheldt; near the French frontier; 35 miles W. S. W. of Brussels. Its splendid Romanesque cathedral, 400 feet long, has five towers and pictures by Jordaens, Rubens, and Gallait; and there are also the churches of St. Quentin and St. Brice (with the grave of King Childeric), the belfry (1190), and a bronze statue (1863) of the Princess d'Epinoy, who in 1581 valiantly defended Tournai against Parma. Though one of the oldest towns in Belgium, it has quite a modern appearance, with fine suburbs and beautiful broad streets. The chief manufactures are hosiery, linen, Brussels carpets, and porcelain. Tournai, the ancient Tornacum, or Turris Nerviorum, was in the 5th and the beginning of the 6th century the seat of the Merovingian kings, subsequently belonged to France, but in 1526 was included in the Spanish Netherlands. During May, 1794, it was the scene of several hotly contested fights between the French and Austro-English armies, the most important of which was that of May 19, in which Pichegru beat the Duke of York. Pop. (1926) 36,032.

Tournament, an encounter between armed knights on horseback in time of peace, as an exercise of skill (which was rewarded by honorary distinctions), and usually an adjunct of some great event, as a royal marriage, etc. The tournament was one of the most cherished institutions of the Middle Ages, furnishing, as it did, an exciting show, and giving the combatants an opportunity of exhibiting their skill, courage and prowess before their friends. The regulations which governed these displays were propounded by the sovereign and enforced by kings-at-arms and heralds. They were usually held by the invitation of some prince, which was proclaimed throughout his own dominions, and frequently also at foreign courts.

In modern usage, a competition or contest of skill, in which a number of individuals take part; as, military

tournament; cycling tournament; billiard tournament, etc. They are quite common in the United States.

Tours, a town of France, capital of the Department of Indre-et-Loire; on the Loire river; 145 miles S. W. of Paris; contains a noted cathedral begun in the 12th and finished in the 16th century. It was known to the Romans as Cæsarodunum; later was noted for its silk manufactures till the revocation of the Edict of Nantes deprived it of nearly one-half of its population of 80,000; and in 1870 was the seat of the Government of National Defense. Pop. (1926) 77,192.

Toussaint l'Ouverture, Dominique Francois, one of the liberators of Haiti; born a slave in 1743; joined the negro insurgents in 1791; and in 1795, for his services against the Spaniards, was made by the French Convention general of brigade, later chief of the army of Santo Domingo. Soon after he cleared the British and Spaniards entirely out of the island, restored order and prosperity, and about 1800 began to aim at its independence of France. Bonaparte having, after the peace of Amiens, proclaimed the reëstablishment of slavery in Santo Domingo, Toussaint declined to obey, whereupon General Le Clerc was sent with a strong fleet to compel him. The liberator was treacherously arrested, sent to France, and flung into a dungeon at Fort de Loux, where he died after 10 months, April 27, 1803.

Tower, Charlemagne, an American diplomatist; born in Philadelphia, Pa., April 17, 1848; was graduated at Harvard University in 1872, and admitted to the bar in 1878. In 1897 he became U. S. Minister to Austria-Hungary; in 1899, Ambassador to Russia; and in 1902–08 was Ambassador to Germany. Died, 1923.

Tower, Zealous Bates, an American military officer; born in Cohasset, Mass., Jan. 12, 1819; was graduated at the United States Military Academy in 1841; served in the Mexican War; was promoted major in August, 1861; fought in the first battle of Bull Run; was severely wounded at the second battle of Bull Run; and for bravery in that action was brevetted Major-General; was promoted colonel in 1874; and was retired in 1883. He died in Cohasset, Mass., March 21, 1900.

Tower of London, the most ancient, and historically the most interesting pile in the English metropolis; a mass of buildings on the N. side of the Thames, immediately to the E. of the ancient city walls, its ramparts and gates surrounded by a dry ditch in pentagonal shape; in outer circuit measuring 1,050 yards. Within this the whole of the buildings are encircled by a double line of walls and bulwarks, in some places 40 feet high and 12 feet thick; the space between the walls being known as the outer ward, and the interior as the inner ward. The inner ward was formerly the royal quarter. The outer ward was the folk's quarter. The inner ward is defended by 12 massive and conspicuous towers, stationed at unequal distances, and possessing distinctive names and formations. In the center, rearing its head proudly above them all, stands the main quadrangular building and great Norman keep known as the White Tower. To the N. are the barracks, and to the N. W. the Church of St. Peter ad Vincula. The entrance to the buildings is on the W. side by the Lion's Gate.

For centuries the Tower was a palace, a prison, a fortress, and a court of law. Here the Plantagenet kings held their gay tournaments, magnificent revels, and pompous religious ceremonials. Here also tragedy succeeded tragedy, and the innocent blood of many of England's bravest and most beautiful poured forth in a cruel stream. Wise statesmen, fair queens, child princes, noble warriors and priests were slain, their only crimes in many cases being their rank, their patriotism, and their faith. "No sadder spot on earth," says Macaulay; "in England. . . . death is there associated . . . with whatever is darkest in human nature and in human destiny, with the savage triumph of implacable enemies, with the inconstancy, the ingratitude, the cowardice of friends, with all the miseries of fallen greatness and of blighted fame."

The Tower is now chiefly used as an arsenal, and has a small military gar-

rison of the yeomen of the guard. The governorship is still a post of distinction.

Towle, George Makepeace, an American author; born in Washington, D. C., Aug. 27, 1841; was graduated at Yale University in 1861, and at Harvard Law School in 1863. He was United States consul at Nantes, France, in 1866–1868; and at Bradford, England, in 1868–1870. He died in Brookline, Mass., Aug. 10, 1893.

Towler, John, an American educator; born in Rathmell, England, June 20, 1811; was educated at Cambridge University, England; removed to the United States and was made Professor of Modern Languages at Hobart College, Geneva, N. Y., in 1850. Five years later he was graduated at the Medical Department of that institution; was there Professor of Chemistry, Toxicology, and Medical Jurisprudence in 1853–1873. He was United States consul to Trinidad, W. I., in 1882–1886. In the latter year he settled in Orange, N. J., and devoted his time to literary work.

Townsend, Charles Henry Tyler, an American entomologist; born in Oberlin, O., Dec. 5, 1863. In 1894–1898 he was field agent in the division of entomology of the United States Department of Agriculture for Texas, Mexico, and New Mexico; subsequently held professorships in New Mexico and the Philippines; and in 1914 again became attached to the Bureau of Entomology, U. S. Department of Agriculture. He was the author of over 300 titles on entomology.

Townsend, Edward Davis, an American military officer; born in Boston, Mass., Aug. 22, 1817; was graduated at the United States Military Academy in 1837. In March, 1865, he was brevetted Major-General U. S. A. for "faithful, meritorious, and distinguished services in the adjutant-general's department during the rebellion." He was placed on the retired list in 1880. During all of the Civil War he was the chief executive officer of the army which brought him probably more than any other military officer into close personal contact with President Lincoln and Secretary Stanton. He died in Washington, D. C., May 11, 1893.

Townsend, Edward Waterman, an American author; born in Cleveland, O., Feb. 10, 1855; member of Congress in 1911–15. His stories and sketches were collected under the titles: "Chimmie Fadden, Major Max, and Other Stories," etc.

Townsend, George Alfred, pseudonym Gath, an American journalist; born in Georgetown, Del., Jan. 30, 1841. He became a journalist in 1860; was special correspondent for the New York "Herald" and New York "World" in 1860–64; afterward public lecturer, and war correspondent. He was author of "Real Life of Abraham Lincoln." He died April 15, 1914.

Townsend, Luther Tracy, an American clergyman; born in Orono, Me., Sept. 27, 1838; was graduated at Dartmouth College in 1859 and at Andover Theological Seminary in 1862. He then enlisted in the 16th New Hampshire regiment and served first as a private and afterward as adjutant; was ordained in the Methodist Church in 1864. He was Professor of Hebrew, and Chaldee and New Testament Greek at the Boston University in 1868–1870; Professor of Sacred Rhetoric and Practical Theology in the same institution in 1872–1893; resigned to devote himself to literature.

Townshend, Charles, an English statesman; born in 1725; entered the House of Commons in 1747; and became a commissioner of trade and plantations in 1749. He was a lord of the admiralty in 1754, member of the privy-council in 1756; secretary of war in 1761–1763; chancellor of the exchequer in 1766. He supported Granville's stamp act (1765), and introduced the celebrated resolutions for taxing the American colonies (June 2, 1767). From so often changing his political opinions he was known as the "weathercock," but he had a great reputation for oratory and wit. He died in Oxfordshire, Sept. 4, 1767.

Township, the corporation of a town; the district or territory of a town. Also, a territorial district, subordinate to a county, into which many of the States are divided, and comprising an area of 5, 6, 7, or perhaps 10 miles square, the inhabitants of

which are invested with certain powers for regulating their own affairs, such as repairing roads, providing for the poor, etc.

Toxicology, that branch of medicine which treats of poisons and their antidotes, or of the morbid and deleterious effects of excessive and inordinate doses and quantities of medicine. See POISON.

Toy, Crawford Howell, an American scholar; born in Norfolk, Va., March 23, 1836; was graduated at the University of Virginia in 1856; studied at the University of Berlin in 1866; and was Professor of Hebrew at Harvard University in 1880–1909.

Toynbee, Arnold, an English social reformer; born in London, England, Aug. 23, 1852. During the four years he spent at Oxford he studied political economy. Endowed with the gift of fluent speech, he later began to address audiences of working men; and believing that the poor could only be adequately helped by those who had lived among them and felt their needs, he took up a residence in Commercial Road, Whitechapel, in 1875, and associated himself with the religious work carried on there by the Rev. S. A. Barnett. From the inspiration of his example and teaching during this period sprang the idea of the famous Toynbee Hall, the genesis of what are known in the United States as Settlement Houses. He died in 1883.

Tracery, in architecture, the species of pattern work formed or traced in the head of a Gothic window by the mullions being continued, but diverging into arches, curves, and flowing lines enriched with foliations.

Trachea, or **Windpipe,** the tube extending from the larynx, or organ of the voice, and from the level of the fifth cervical vertebra to the third dorsal vertebra, at which latter point the trachea bifurcates or divides into two main bronchi or divisions, one supplying each lung with air tubes. The average length of the trachea is 4½ inches, and its diameter about three-fourths of an inch, the latter measurement being greater in males than in females. The trachea consists of fibrous membranes united by elastic cartilaginous rings, rendering the tube flexible and patent. The cartilages are circular but imperfect rings, each being joined posteriorly by a fibrous membrane. They vary from 16 to 20 in number. The muscular fibers of the trachea are of longitudinal and transverse arrangement. The trachea is lined with mucous membrane, the epithelium of which is ciliated. The trachea receives blood from the inferior thyroid arteries, and nerves from the pneumogastric and recurrent trunks, and also from the sympathetic system. The right bronchus, or one of the main divisions of the trachea, is wider and shorter than the left. It enters the lung opposite the fourth dorsal vertebra. The left bronchus is smaller and more oblique than the right, and enters the left lung at the level of the fifth dorsal vertebra. Foreign bodies falling into the trachea most frequently enter the right bronchus, because of the larger size of the latter, and because of the more oblique position of the left bronchus.

Tracing Paper, transparent paper which enables a drawing or print to be clearly seen through it when laid on the drawing, so that a pen or pencil may be used in tracing the outlines of the original. It is prepared from smooth, unsized white paper rendered transparent by a varnish made of oil of turpentine with an equal part of Canada balsam, nut oil, or other oleoresin.

Tractarianism, in Church history, the name given to a movement in the Church of England, originating in the University of Oxford in the year 1833. Its leaders were John Henry (afterwards, Cardinal) Newman, Dr. E. B. Pusey, John Keble, and R. H. Froude. The name of Tractarians was given them, because their views were propagated in a series of publications entitled "Tracts for the Times." The object of the tracts, in general terms, was to show that many doctrines held by the Roman Catholic Church, but repudiated by Evangelical churchmen, were true. Among them, that the Sacraments, and not preaching, were the means of divine grace; that men became members of Christ's kingdom by baptism, renewed from time to time by the Communion; and that the bread and wine thereat, when blessed by the priest became the actual body

and blood of Christ. They also contended for the Apostolic succession. The teaching of Newman in Tract No. 90 that a clergyman might hold those doctrines consistently with his subscription to the thirty-nine Articles of the Church of England, caused widespread uneasiness and finally led the Bishop of Oxford to interdict the further publication of the Tracts. Newman, thereupon, resigned the incumbency of St. Mary's, Oxford, and his other places in the English Church, and, in September 1845, entered the Roman Catholic Church. His example was followed by many of his disciples, though Dr. Pusey remained in the Church of England and continued to foster the movement there. He differed from Newman in rejecting the doctrine of Purgatory, the worship of the Virgin Mary, the invocation of saints and the acceptance of Papal authority.

Traction, the act of drawing a body along a plane, usually by the power of men, animals, or steam, as when a vessel is towed upon the surface of water, or a carriage on a road or railway. The power exerted in order to produce the effect is called the force of traction; the line in which this force acts is called the line of traction; and the angle which this line makes with the plane along which the body is drawn by the force of traction is called the angle of traction. Also the adhesive friction of a wheel on the rail, a rope on a pulley, etc. The tractional surface of a driving wheel is the face of its perimeter.

Traction Engine, a locomotive engine for drawing heavy loads on common roads, or over arable land, as in agricultural operations. Some of the earliest locomotive engines, as Murdock's, were designed for this very purpose.

Tracy, Benjamin Franklin, an American lawyer; born in Owego, N. Y., April 26, 1830. He raised the 109th and 137th Regiments of New York volunteers in July and August, 1862; took a distinguished part in the operations at the front in 1862–1865, and in the latter year was promoted Brigadier-General of volunteers for gallantry in battle. He was United States district attorney for the Eastern District of New York in 1866–73; judge of the Court of Appeals in 1881–82; Secretary of the Navy in the cabinet of President Harrison in 1889–93; president of the commission which drafted the charter for Greater New York in 1895–96; and unsuccessful candidate for mayor in 1897. He died Aug. 6, 1915.

Trade, Board of, in the United States, a body of men selected from among the business men of a city, and appointed to represent and act for the whole business community in advancing and protecting their interests.

Trade Dollar, a silver dollar of the United States, containing 378 troy grains of silver and 42 troy grains of alloy. Dollars of this description, issued under Act of Congress of Feb. 12, 1873, were legal tender to the amount of $5. Those issued under the Act of July 22, 1876, possessed no legal tender power. The trade dollars were intended for trade with countries doing business on a silver basis; hence the name.

Trade-mark, a peculiar mark used by a manufacturer to distinguish his own productions from those of other persons. Such marks can now be registered and protected in all the more important countries, and between these also there is a general reciprocity as to protection. Regarding trade-marks many nice questions may arise, and it is not easy to define what constitutes a valid trade-mark. A mere descriptive title or a geographical name will not constitute a proper trade-mark; what it is best to select is some invented word or words, or a word or words having no reference to the character or quality (though suggestive of excellence), some distinctive device, figure, emblem, or design, or a written signature or copy of such. Any mark or name calculated to mislead as to the real nature or origin of the goods will be vitiated. In the United States trade-marks are registered at the Patent Office, at a fee of $25, the right running for 30 years.

Trade Protection Societies, associations composed of merchants, tradesmen, and others, formed for the promotion of trade and for protecting the individual members from losses in their business transactions; one of

the earliest being the London Association of Guardians for the Protection of Trade, established in 1776. In 1871 the London Board of Trade granted a license for incorporation to one under the Companies Acts, 1862–1867. The operations of these societies used to be confined chiefly to the compilation of registers of bankruptcies, insolvencies, and private settlements with creditors. Each member informed the secretary of the name, occupation, and address of the customers who became insolvent, with the amount of dividend their estate yielded; and latterly, whether the insolvency was due to recklessness and extravagance, or was innocent misfortune. Special attention was directed to the exposure of swindlers and persons who had been guilty of fraud or embezzlement. The information accumulated in the registers, though always accessible to such members as made inquiry at the offices of the society, was kept strictly private from all others. But the extraordinary development of commercial enterprise which took place in the early part of the 19th century added a new stimulus to the trade protection movement. The registers which the societies now printed and circulated among their members contained transcriptions from the following public records — viz., the records of the bankruptcy courts, registers of assignments and trust-deeds, bonds or warrants of attorney, bills of sale, judges' orders, protested bills, and decrees in absence. The societies also undertook to recover past-due bills and accounts for their members, to investigate the circumstances connected with bankruptcies and insolvencies, collect dividends, and perform the general agency business of their members — the whole being done under the direction of a committee appointed for this purpose. Committees were also appointed to scrutinize all measures affecting trade and commerce which might be introduced into Parliament, and to promote legislation favorable to the commercial interest. The sphere of action of trade protection societies thus rapidly widened. The older societies established offices and branches throughout the country; new societies sprang up in the large provincial cities, which in their turn opened agencies and branches in other towns and villages; and the various societies being in communication, the machinery of the whole is available for the purposes of each. In 1852 the various societies formed themselves into an association, which now includes 179 societies. Annual meeting of delegates from all these is held in London, at which matters affecting trade are discussed.

In the United States, especially in the large cities, there are numerous organizations to secure the foregoing results, although much reliance is placed by business men on the reports of the various general and special commercial agencies.

Trades Union, or **Trade Union,** an organized body of workmen in any trade, manufacture, or industrial occupation associated together for the promotion of their common interests. Specific aims may vary in different unions, but generally speaking the aims of these organizations are the provision and distribution of funds, and by other means to regulate the conditions of labor in the trades included in the society, and the relation of its members with them; to promote the general and material welfare of its members; to assist them when out of work and in distressed circumstances; to support them in case of sickness, accident, superannuation, and loss of tools by fire; to provide for their burial and the burial of their wives; and to aid other trade societies having for their object the promotion of the interests of workmen. In the United States trades unions are numerous, scarcely any form of labor being without one, the balance being distributed in U.S. and other countries.

In 1927 the International Congress in Paris reported a membership of 13,445,553. Great Britain and Germany made up over 9,000,000 of this total.

Trade Wind, in meteorology, in the plural, certain ocean winds, blowing constantly in one direction or nearly so, that can be calculated on beforehand by the mariner, and are therefore beneficial to trade. They exist on all open oceans to a distance of about 30° N. and S. of the equator, blowing from about the N. E. in the Northern, and from the S. E. in the Southern

Hemisphere. Where they meet they neutralize each other, creating a region of calm N., and the same distance S. of the equator. Atmospheric air expands by heat, and, expanding, naturally ascends, its place being supplied by a rush of colder and consequently of denser air beneath. The process is continually in progress, to a great extent, everywhere throughout the tropics, but especially above the land. Neither the direction nor the area of the trade winds remains fixed. Since they supply the place of rarefied air, which is ascending, they must follow the movement of the sun, blowing to the point of greatest rarefaction, as a cold current coming through a keyhole goes to the fire. Hence, the area of the trade winds extends from two to four degrees farther N. than usual when the sun is at the Tropic of Cancer, and the same number of degrees farther S. than usual when he is at the Tropic of Capricorn. The trade winds were not known till Columbus' first voyage. They are most marked on the Atlantic and Pacific Oceans, but become modified in the vicinity of land, so as to lose their distinctive character. In the Indian Ocean and in Southeastern Asia they become altered into monsoons.

Tradition, in its widest signification, whatever statements were transmitted orally from one generation to another. In theology, the teaching of early divines, not in the New Testament, but said to have been derived from Christ or his apostles.

Trafalgar, a low and sandy cape on the S. W. coast of Spain, at the N. W. entrance of the Strait of Gibraltar. The famous naval battle in which Nelson lost his life, after defeating a larger French and Spanish fleet under the command of Villeneuve and Gravina, was fought off this cape, Oct. 21, 1805. The Franco-Spanish fleet lost 19 ships out of 33.

Tragacanth, in botany, a kind of gum obtained from various species of Astragalus. Most of the real tragacanth comes from a bush about two or three feet high, with pinnate leaves having six, seven or eight pairs of pointed leaflets. It is a native of Northern Persia, Armenia, and Asia Minor. The gum exudes during summer in tortuous streams, which are allowed to dry on the plant.

Tragedy, a dramatic poem representing an important event, or a series of events, in the life of some person or persons, in which the diction is elevated, and which has generally a tragic or fatal catastrophe; that species of drama which represents a tragical situation or a tragical character. Tragedy originated among the Greeks in the worship of Dionysus.

Train, George Francis, an American traveler, promoter, and author, familiarly known as "Citizen Train"; born in Boston, Mass., March 24, 1829; made a fortune in business early in life; wandered all over the globe; held public debates on topics of the day with the ablest orators he could find; pioneered the first street railway in England, Australia, and the United States; had "been in fifteen jails without a crime"; and was author of at least 50 books. He was extremely eccentric, big-hearted, very fond of children, and an all-round unique character. He died Jan. 18, 1904.

Trajan, in full, **Marcus Ulpius Trajanus,** Roman emperor; born in Spain A. D. 52; the son of Trajanus, a distinguished Roman commander under Vespasian. He served against the Parthians and on the Rhine, where he acquired so high a character that Nerva adopted him and created him Cæsar in 97. Nerva died in 98, and Trajan, who was then in Germany, peaceably succeeded to the throne. In 103 he wrote the famous epistle to Pliny, governor of Pontus and Bithynia, directing him not to search for Christians, but to punish them if brought before him; and on no account listen to anonymous charges. For some years Trajan occupied himself with the work of administration, but in 114 he set out on an expedition against the Parthians which resulted in the reduction of Armenia to a Roman province. He is said to have been sensual in his private life, but his good qualities as a ruler were such that even 250 years after his death senators greeted a new emperor with the wish that he might be more fortunate than Augustus and better than Trajan. He died in Cilicia in A. D. 117.

Trajan's Column, a celebrated monument in Rome, Italy, erected by the Roman Senate and people in honor of the emperor in A. D. 114. It still stands in the Forum of Trajan, and is constructed entirely of marble. The shaft is 87 feet high, and the total height of pedestal and statue, 147 feet. Around the column runs a spiral band 3 feet wide and 660 feet long, covered with well preserved reliefs from Trajan's war with the Dacians, comprising, besides animals, etc., 2,500 human figures. The reliefs, which are reproduced in casts preserved in the Lateran, are invaluable for the light they throw on Roman costume.

Trajan's Wall, a line of fortifications in the S. of the Dobrudja; extends from the Danube, at Czernavoda, to a point on the Black Sea, near Kustendji, a distance of 37 miles. It consists of a double (in some parts a triple) line of earth ramparts about 10 feet high. Another wall of the same name, constructed by a Roman legion A. D. 105–155, stretches from the Pruth E. to the Black Sea, and is included in the territory "restored" to Russia by the treaty of Berlin, July 13, 1878.

Trall, Russell Thacher, an American physician; born in Vernon, Conn., Aug. 5, 1812; settled with his parents in Western New York; studied medicine and in 1840 settled in New York city, where he became a hydropathist. He there established what is believed to have been the first institution in the United States for water-cure treatment in 1843, and 10 years later in connection with it opened a medical school for both sexes. This school was chartered as the New York Hygeiotherapeutic College in 1857. Among his many publications were "The True Temperance Platform, or an Exposition of the Fallacy of Alcoholic Medication" (1864–66), and "Water-Cure for the Million" (1867). He died Sept. 23, 1877.

Trance, a condition closely allied to sleep, but differs from it as regards duration and profound insensibility to external impressions. Death trance is, according to Dr. Mayo, a positive status; a period of repose, the duration of which is sometimes definite and predetermined, though unknown. "The basis of death trance is suspension of the action of the heart, of breathing, and of voluntary motion; generally, likewise, of feeling and intelligence; and the vegetative changes in the body are suspended. With these phenomena is joined loss of external warmth, so that the usual evidence of life is gone." There are no well-authenticated cases on record in which trance has simulated death for any length of time, and the above opinion has many opponents.

Transcaspian Railway, a noteworthy railway, starting from Uzna Ada on the Caspian, was opened as far as Merv in 1886, to Samarkand in 1888, and by 1900 was extended to Tashkend and Andijan. The Amu-Daria (Oxus) is crossed by a wooden bridge 6,804 feet in length.

Transcaucasia, the tract of territory belonging to Russia, and extending between the Caucasus on the N. and Turkey in Asia and Persia on the S. The provinces on both sides of the Caucasus, with the added Armenian districts, constitute Caucasus or Caucasia in the widest sense, and are under one central authority, with 10 minor provinces; but the territory is sometimes divided into North Caucasus, Transcaucasia, and Armenia. Transcaucasia comprises 11 provinces, districts, etc.; total area, 95,405 square miles; pop. (Est.) 8,000,000.

Transcendentalism, in philosophy, a term applied to the Kantian philosophy from the frequent use of the term transcendental by Kant, who gave it a meaning quite distinct from that which it till then bore. The Transcendentalism of Kant inquires into, and then denies, the possibility of knowledge respecting what lies beyond the range of experience. Kant distinguished knowledge into a priori (not originating from experience) and a posteriori (derived from experience), thus giving to the phrase a priori knowledge a meaning different from that which it had borne in philosophy since the days of Aristotle. Transcendental philosophy is a philosophy of the merely speculative pure reason; for all moral practice, so far as it involves motive, refers to feeling, and feeling is always empirical.

Transept, in architecture, that part of a church which is placed be-

tween the nave and the choir, extending transversely on each side, so as to give to the building the form of a cross.

Transfiguration, Feast of the, a festival instituted in honor of the Transfiguration of Christ; is one of the 12 great feasts which come next after Easter in dignity. In the Anglican Church it is only a black-letter feast. It is commonly said to have been instituted in the West by Pope Calixtus III. (1455–1458), but is mentioned in the 9th century. Both Greeks and Westerns keep it on Aug. 6.

Transfusion of Blood, a surgical operation by which blood is conveyed directly from the body of one person to that of another. The operation was formerly restricted to cases of profuse hemorrhage in connection with labor chiefly, but now it is practised in cases of extreme and dangerous exhaustion in the hope of saving life.

Transit, in astronomy, the passage of a heavenly body over the meridian. Also the passage of one of the inferior planets, Mercury or Venus, over the sun's disk. Mercury being so near the sun, and so difficult to observe with accuracy, its transits are not nearly so important to astronomers as those of Venus.

In engineering, a portable instrument resembling a theodolite, designed for measuring both horizontal and vertical angles. It is provided with horizontal and vertical graduated circles, one or two levels, and a compass, and is mounted upon a tripod stand.

Transit Instrument, an instrument designed accurately to denote the time when a heavenly body passes the meridian. It consists of a telescope supported on a horizontal axis, or pivots. The telescope has a series of parallel wires crossing its object glass in a vertical direction. When a star, designed to be the subject of observation, is seen approaching the meridian, the observer looks at the hour and minutes on a clock placed at hand for that purpose. He then notes the passage of the star across such wire, listening at the same time to the clock beating seconds. The exact time at which the star passes each wire is then noted and the mean between the time of passing each two wires equidistant from the center being taken, gives a very close approximation to the truth. The transit instrument is the most important of what may be called the technical astronomical instruments. The smaller and portable kinds are used to ascertain the local time by the passage of the sun or other object over the meridian, while the larger and more perfect kinds, in first-class observatories, are used for measuring the positions of stars, for forming catalogues; its special duty being to determine with the greatest accuracy the right ascension of heavenly bodies.

Transleithania, the Austro-Hungarian region east of the Leitha River, as opposed to Cisleithania, the region west of the Leitha.

Transmigration, in comparative religions, metempsychosis; the doctrine of the passage of the soul from one body into another. It appears among many savage races in the form of the belief that ancestral souls return, imparting their own likeness to their descendants and kindred, and Tylor thinks that this notion may have been extended so as to take in the idea of rebirth in bodies of animals. In this form the belief has no ethical value. Transmigration first appears as a factor in the gradual purification of the spiritual part of man, and its return to God, the source and origin of all things, in the religion of the ancient people of India, whence it passed to the Egyptians, and, according to Herodotus, from them to the Greeks. In modern times Lessing held it and taught it; it formed part of the system of Swedenborg.

Transmission of Power, the supplying of power for doing work at a distance from the engine or other source of energy. An ordinary tow rope evidently fulfills such a function; and in a wide sense all forms of connecting rods, belting, and similar gearing do the same. The revolving shaft of a screw steamer transmits rotary motion through a considerable distance; but for long distance transmission ordinary mechanical devices, if they do not altogether fail, lose greatly in efficiency. In a series of shafts geared one to another by beltings there must

be considerable loss through slipping. In the pneumatic dispatch and in boring compressed air has been successfully applied as a transmitter of power. Cable cars also form a good illustration. It is in electricity, however, that we find the most promising agent for indefinite transmission of power. Thus a dynamo-electric machine may be worked by a waterfall; its voltage or potential may be transmitted along wires to distant stations, and there transformed into currents capable of driving an electric motor and keeping a whole factory in operation. See ELECTRIC TRANSMISSION.

Transplanting, in surgery, the removal of a substance from one part of the human body to another or from one person to another. Modern surgery has, within recent years, been very fertile in discoveries in this line of operations. Professor Nussbaum, of Munich, in 1875, described an operation for the loss of bone which he denominates transplantation of bone. Transplanting of skin, by grafting, was invented by M. Reverdin of Geneva, in 1869, and was introduced into British surgery by Dr. Pollock, in 1870. This operation is peculiarly adapted to cases where large granulating surfaces are exposed, as in cases of extensive burns, and is the most common form of surgical transplantation.

Transport, a ship or vessel employed by a government for carrying soldiers, warlike stores, or provisions from one place to another. At the beginning of the Spanish-American War the United States had no ships of this class. A number of coastwise crafts were purchased and transformed into transports on which troops were shipped to Manila and other points.

Trans-Siberian Railway, a railway system of Russia, extending from St. Petersburg to Port Arthur. The entire distance from St. Petersburg to Vladivostok is 6,677 miles; the fare, first-class, $128.75; second-class, $87.55; third-class, $46.35; and the time of the journey about 27 days. Connected with the Chinese railway system, a direct service from Paris to Peking, arranged for May 1, 1904, was interrupted by Russo-Japanese War.

Transubstantiation, the idea that in the holy sacrament the bread and wine become the actual body and blood of Christ. The doctrine is an article of the Roman Catholic faith and has been a subject of religious controversy ever since the Middle Ages.

Transvaal, a former Boer republic, later a British colony, and since 1910 a province in the Union of South Africa; lying between the Vaal river, which forms the greater part of its S. boundary, and the Limpopo river, which separates it from Rhodesia and Bechuanaland; area, 110,426 square miles; pop. (1926) 2,087,636; whites, 543,485; natives and colored, 1,544,151; capital, Pretoria; total pop. (1926) 54,326. Prior to annexation to Great Britain, it was ruled by a president elected for five years, only native Boers having the franchise; and a legislature of two houses, each of 27 members, elected for four years. The president had a council of four official members. One-third of the population is estimated to be engaged in agriculture, the lands of the colony generally, outside the mining districts, being extremely productive, and the demand for farm products in the mining regions very great, even in excess of the local products at the present time. From the establishment of the republic trouble arose with the natives around them, and during one of these disturbances the British intervened in 1877 and annexed the territory. The Boers, however, rose in rebellion in 1880, and after a short war, in which the British were worsted, the independence of the country, subject to the "suzerainty" of the British crown. was again recognized. In 1884 a new convention was signed giving the Transvaal independence in the management of the internal affairs; but placing certain restrictions on its authority to make treaties with foreign powers. In 1886 gold was discovered.

In 1899 trouble again arose between the Transvaal government and the Uitlanders. The latter sent numerous petitions to the Queen of England to help them in their contentions against the Boers. A conference was arranged between President Kruger and Sir Alfred Milner, the British high commissioner at Cape Town, which was held May 31, 1899, at the capital of the Orange Free State; but it failed to

yield any benefits as Kruger declined to make the so-called "reforms" that Milner demanded, and Milner declined to submit disputes to international arbitration in the way Kruger suggested. The chronic source of trouble in the Transvaal was the fact that the Uitlanders were denied any voice in the direction of affairs, although paying seven-eighths of the taxes, the dynamite tax and monopoly created by the Boer authorities, also being excessive.

On Oct. 10, 1899, the Transvaal government sent an ultimatum to Great Britain demanding the withdrawal of all her troops in the Transvaal. The reply to this being unsatisfactory, the Transvaal declared war Oct. 11, 1899, the Orange Free State supported its sister republic, and the next day a Transvaal force invaded Natal. Severe British reverses were followed by the advent of Generals Roberts and Kitchener, and the capture of Pretoria, which took place on June 5, 1890. On Sept. 3, the South African (Transvaal) republic was officially annexed by Great Britain under the name of the Transvaal Colony. The war came to a conclusion in 1902 by honorable surrender on the part of the Boers. See SOUTH AFRICA, UNION OF.

Transvaal War, a war between the (then) South African Republic and Great Britain in 1880–1881. The Boer victory at Majuba Hill, Feb. 27, 1881, was soon followed by peace.

Transylvania ("the country beyond the forest"), a former principality, now an integral part of the Kingdom of Rumania; bounded on the N. and W. by Hungary proper; on the S. and E. by the Carpathian mountains, which formerly were the boundaries of Rumania, and on the N. E. by Bukowina; area, about 22,000 sq. m. It is a picturesque region of high mountains and valleys; has a temperate, healthful climate, a very fertile soil, and forests comprising nearly two-fifths of the entire area; and produces bountiful crops of grains, fruits, and vegetables. In antiquity the region formed a part of Dacia; Austria gained it in 1699; and Hungary in 1867–8. In the World War the region was invaded by the Russians on Nov. 8, 1916. Country ceded to Rumania, Dec., 1918. Pop. about 2,678,500.

Trapa, in botany, the water caltraps, floating plants, with the petioles tumid in the middle, and clustered leaves, those under water cut into capillary segments. They are found in temperate Europe, Siberia, India, Cochin China, etc. One species is the tribulus of the Romans, and the nuts are sold in the markets of Italy. They are called water-chestnuts in France.

Trapezium, as defined by Euclid, any quadrilateral except a square, an oblong, a rhombus, and a rhomboid. Later Greek geometers seem to have used the word in the more restricted sense of a quadrilateral with one pair of parallel sides; and the word trapezoid was introduced to describe a quadrilateral which had no two sides parallel.

Trapezoid Bone, in anatomy, a bone of the wrist of which the superior surface articulates with the scaphoid bone, the external with the trapezium, the internal with the os magnum, and the inferior with the second metacarpal bone.

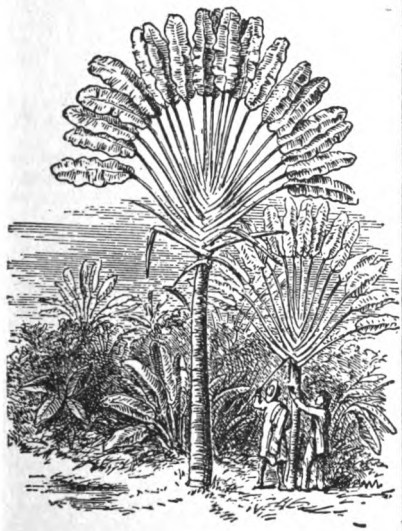
Traphagen, Frank Weiss, an American chemist; born in Eaton, O., July 20, 1861; was graduated at the School of Mines, Columbia University, in 1882. In 1893 he accepted the chair of chemistry at the Montana State College and became chemist of the Montana Agricultural Experiment Station.

Trappists, a religious order, celebrated for its extraordinary austerities, is so called from an abbey of the Cistercian order, founded in the middle of the 12th century, in the narrow valley of La Trappe, near Mortagne, in the Norman department of Orne — called "the trap" because of its inaccessibility.

Traveler's Joy, in botany, the genus Clematis; specifically, a North American species, climbing with pinnately-compound leaves and a large solitary campanulate, nodding flower of purple or violet color. It was introduced into Europe as a garden plant in 1730.

Traveler's Tree. This noble and unique plant is a native of Madagascar, and is now subspontaneous in Mauritius. The leaves surmounting

the palm-like trunk diverge on opposite sides from the summit, "somewhat in the same way as the ribs of a fan from its center," each consisting of a footstalk six to eight feet long, and an oblong, bright-green, shining, undivided blade of four to six feet. In the cup-like base of the leaf-stalks a considerable quantity of water is contained, which can be tapped by piercing from below; and this supply, being availed of by thirsty travelers, has originated the name of traveler's tree. The leaf blades are used for thatching, the seeds are edible, and the blue aril furnishes an essential oil.



THE TRAVELER'S TREE.

Traveling Sidewalks, movable platforms to carry passengers from one point to another. They were first practically tested at the World's Columbian Exposition in Chicago in 1893, and since then successfully installed in Berlin. A modification of this plan is the "escalator" traveling stairway, installed with great success in some of the elevated stations, and large department stores in New York, Chicago and other cities.

Travesty, a literary term used to denote a burlesque treatment of a subject which has been originally handled in a lofty or serious style. It differs from a parody in that in travesty the character and the subject matter remain substantially the same, while the language becomes grotesque, frivolous, and absurd, whereas in a parody the subject matter and characters are changed and the language and style of the original humorously imitated.

Travis, William Barrett, an American military officer; born in Conecuh co., Ala., in 1811. In 1832 he removed to Texas, took up arms against Mexico; and commanded the small garrison at the Alamo, when that place after a famous defense of 10 days was carried by 4,000 Mexicans, in March, 1836. Travis with five others, the only survivors at the capture of the fort, was put to death on March 6, by order of the Mexican commander, Santa Ana.

Trawling, a mode of fishing in which a net in the form of a large bag, with a strong framework keeping the mouth properly distended, is dragged along the bottom of the sea. It is the mode chiefly adopted in deep-sea fishing, and has largely developed in recent years, being much prosecuted by small steam vessels specially built for the purpose, but it is not ordinarily allowed within three miles of the shore. Cod, whiting, and other whitefish are taken by it in large numbers, and some kinds of flat fish, as soles, can scarcely be taken in any other way. Trawling can be practised only on a smooth bottom, as a rough bottom would destroy the net.

Treadmill, a wheel driven by the weight of persons treading on the steps of the periphery; originally an invention of the Chinese to raise water for the irrigation of fields. It is employed in English prisons, and forms part of the "hard labor" of persons convicted. The usual form is a wheel 16 feet long and five in diameter, several such wheels being coupled together when necessary for the accommodation of the prisoners. The circumference of each has 24 equi-distant steps. Each prisoner works in a separate compartment, and has the benefit of a hand rail. The wheel makes two revolutions per minute, which is

equivalent to a vertical ascent of 32 feet. The power may be utilized in grinding grain or turning machinery.

Treadwheel, a wheel turned by men or animals, either by climbing or pushing with the feet. In one form employed for raising water a rope is wound directly around the axle and has a bucket at each end; these are alternately raised and lowered by reversing the movement of the wheel. A form of treadwheel in which a donkey walks inside of a large wheel is used in pumping from the deep well of Carisbrook Castle, England; turn-spit dogs were formerly used in turning the spit upon which meat was roasted; and dogs are employed in some dairies to turn the barrel churns or agitate the vertical dashers of plunger churns. Like the modern treadmill the treadwheel was formerly used as a means of punishment and prison discipline.

Treason, High, that crime which is directly committed against the supreme authority of the State, considered to be the greatest crime that can be committed.

In the United States treason consists in levying war by a citizen against the country, or adhering to its enemies. In the session of Congress (1901–1902), several measures were introduced making any attack on the life of the President, Vice-President, or certain other government officials an act of treason, and punishable by death. The provision was also introduced that the offender should be tried by the Federal Courts, thus removing such cases from the jurisdiction of State courts. A law much modified from the original bills was passed.

Treasury, a place or building in which treasure is deposited; a storeplace for wealth; particularly, a place where the public revenues are deposited and kept, and where money is disbursed to defray the expenses of government; also, a place where the funds of an incorporated company or private society are deposited and disbursed. In particular, a department of government having control over the management, collection, and expenditure of the public revenue.

Treasury Department, one of the executive branches of the United States government; the fiscal branch of the government. It controls the collection, custody, and disbursement of the public revenue, and it embraces those valuable aids to trade and commerce — the Lighthouse, Life-saving, Coast and Geodetic Survey, Marine Hospital (Quarantine), Immigration, and Navigation services. It is presided over by a secretary, who directs the collection, safe-keeping, and disbursement of the revenue, submits to Congress the estimates of annual expenditures, and of the probable revenue; prepares plans for the improvement and management of the revenue, and for the support of public credit; prescribes the forms of keeping and rendering all public accounts; collects and registers statistics of commercial and manufacturing operations, and in general directs the business of the department, in all of which he has the aid and advice of three assistant secretaries and the assistance of a corps of bureau officers who attend to matters of administrative detail in their respective services. Payments are made on warrants issued by the secretary or an assistant secretary, countersigned by either the first or second comptroller, and registered by the register of the treasury. The office of the Treasurer of the United States is a bureau of the Treasury Department, and is specially charged with the custody of the public money. Other important branches of the Treasury Department are the Bureau of Engraving and Printing, Bureau of the Mint, Office of the Comptroller of the Currency, and the Secret Service Division engaged in the detection and prevention of counterfeiting.

Treaty, specifically, an agreement, contract, or league between two or more nations or sovereigns, formally signed by commissioners, duly accredited, and solemnly ratified by the several sovereigns or supreme authorities of each state. Treaties include all the various transactions into which States enter between themselves, such as treaties of peace, or of alliance, offensive or defensive, truces, conventions, etc. Treaties may be entered into for political or commercial purposes, in which latter form they are usually temporary. The power of entering into and ratifying treaties is vested in monarchies in the sovereign; in re-

publics it is vested in the chief magistrate, senate, or executive council; in the United States it is vested in the President, by and with the consent of the Senate.

Trebizond, the principal Turkish post on the Black Sea; capital of the vilayet of the same name; the second commercial city of the empire; 110 miles N. W. of Erzerum. It is situated on the steep slope of the Kolat Dagh (800 feet high) facing the sea; is partly surrounded by walls, and is strongly fortified. The city was founded in 756 B. C.; was a great trading town in Zenophon's time, and a noted emporium under the Roman empire; and was the capital of the Comnenian Empire of Trebizond in 1204–1461, since which time it has belonged to Turkey. In the World War the city was occupied by the Russians on Feb. 16 and April 17, 1916. Pop. (1924) Est. 60,000. See APPENDIX: *World War.*

Tree, in botany, any woody plant rising from the ground, with a trunk, and perennial in duration; an arborescent plant as distinguished from a shrub, an under-shrub, and an herb. Trees occur in many orders, their stems varying in structure according to the sub-kingdoms to which they belong. The age of certain trees is often great, and, when cut down, the number of years they have existed can be ascertained by counting the annual zones. Some of the giant cedars of California are more than 100 feet in circumference, 400 feet high, and certainly 3,000 years old. The planting of trees is now more attended to than formerly, especially in cities and on the prairie lands of the United States.

Tree Fern, in botany, a fern rising to the elevation, and, to a certain extent, having the structure of a tree. The trunk is really a rhizome, consisting of a woody cylinder, of equal diameter at each end, growing only at the top, and composed internally of loose, cellular substance, which often disappears. Tree ferns flourish further from the equator in the Southern than in the Northern Hemisphere. They do so in New Zealand.

Tree Sorrel, in botany, an evergreen plant, about two feet high, with greenish flowers. It is cultivated in the United States.

Tree Soul, an animating and individuating principle supposed by races practising tree worship to reside in every tree.

Tree Worship, in comparative religion, a form of religion which has been general to most of the great races of mankind at a certain stage of mental development. It may have been a particular kind of nature worship, or have arisen from the animistic conception prevailing among the races of low culture at the present day, that trees were the residences or embodiments of spirits or deities. At the present day tree worship is prevalent among native races in Africa, Asia, and Australia. In Europe, though traces of it still linger in folk tales and popular customs, it no longer exists as a cult, except among the people of the Chersonese, who, though nominally Greek Christians, "still adhere to their beliefs in good and evil spirits, and worship them — the good spirits in forests and groves where coniferous are mixed with foliaceous trees, and the evil spirits in purely coniferous forests. Every god is represented by a special tree, the worship of which is provided for by a separate priest."

Trefoil, or **Treyfoil,** in architecture, an ornament used in Gothic architecture, formed by moldings in the heads of window lights, tracery, panelings, etc., so arranged as to resemble the trefoil or three-leaved clover. The trefoil was the badge of the Second Corps, in the Army of the Potomac, in the American Civil War.

Trees of Liberty. The custom common to various nations of celebrating certain festive occasions by setting up booths and huts of forest boughs, probably suggested the Tree of Liberty of the American Revolution, imitated in the French Revolution.

Tremain, Henry Edwin, an American military officer; born in New York city, Nov. 14, 1841; was graduated at the College of the City of New York in 1860, and at the Columbia Law School in 1867; served in the Union army in 1861–1866; was brevetted Brigadier-General of volunteers. He greatly distinguished himself at the battle of Resaca, Ga., May 15,

1864; and for his conduct in that action received a Congressional medal of honor. He was first assistant United States attorney of New York in 1873–1877; and colonel of the veterans of the 7th regiment New York National Guards in 1887–1891. D. 1910.

Tremont, the early name by which Boston, Mass., was known. It arose from the three hills on which the city is built. It has also been called Trimount, or Trimountain.

Trench, Richard Chenevix, an English clergyman; born in Dublin, Ireland, Sept. 9, 1807; was graduated at Trinity College, Cambridge, in 1829. He entered the Church; was consecrated archbishop of Dublin in 1864. He died March 28, 1886.

Trenchard, Stephen Decatur, an American naval officer; born in Brooklyn, N. Y., July 10, 1818; was appointed to the navy in 1834; took part in the Seminole War in Florida; served on board the "Saratoga" in the war with Mexico; was in the "Powhatan" on her diplomatic cruise to China and Japan in 1857–1860; and commanded the "Rhode Island" in both attacks on Fort Fisher. He was promoted captain in 1866; commodore in 1871; served on the examining board in 1871–1872, and as lighthouse inspector and on headquarters duty in 1873–1875; became rear-admiral in 1875; commanded the North Atlantic squadron in 1876–1878, and was retired in 1880. He died in New York city, Nov. 15, 1883.

Trent (*Ger.* Trient), a fortified town of Italy, formerly an Austrian Province of Tyrol; at the junction of the Adige and Fersina rivers; 51 miles N. E. of Verona. Its embattled walls and towers fill the whole breadth of the valley. It is practically an Italian province, as nearly all of its inhabitants speak that language only. In 774 it became a part of Italy; in 1027 it was transferred to Germany; in 1803 it passed to Austria; and in 1814 it was formally annexed. The region occupied the same relation to Italy as Alsace-Lorraine did to France. See APPENDIX: *World War.*

Trent Affair. In October, 1861, Capt. Charles Wilkes, U. S. N., intercepted at sea the British mail steamer "Trent," bound from Havana to St. Thomas, and took off two Confederate commissioners, accredited to France, Messrs. Mason and Slidell, who were among her passengers. They were taken to Boston, and imprisoned at Fort Warren, but were released on Jan. 1, 1862, on the demand of the British government, and permitted to proceed to Europe. The affair created intense excitement at the time, but Secretary Seward accepted England's demand as an adoption of the American doctrine which denied the right of search, and on that ground replied that the prisoners would be cheerfully given up.

Trent, Council of, the 18th in order and the first in importance of the "Œcumenical" councils recognized by the Roman Catholic Church; was called forth by the Reformation in the 16th century, and demanded by both parties in the contest, for the reform of church discipline and the settlement of the points of controversy. After being repeatedly postponed, it was convened at Trent as an exclusively Roman council by Pope Paul III., Dec. 13, 1545. In March, 1547, it was transferred to Bologna, but was reopened at Trent, by Pope Julius III., May 1, 1551. It was broken up, Jan. 18, 1562, in consequence of the victorious advance of the Elector Moritz, but was recalled by Pope Pius IV., Jan. 18, 1562, and reached its close, at its 25th session, Dec. 4, 1563. Its decrees and canons, which were confirmed by a bull of Pius IV., Jan. 26, 1564, are drawn up with much clearness and precision, though the doctrines of the Protestants are often exaggerated or falsified. They were immediately acknowledged in Spain, Portugal, Italy, Poland, and Catholic Germany, and, in their doctrinal part, in France. The principal articles of faith decreed, with anathemas, were the canon of Scripture, with the Church as the sole interpreter, progressive justification, the seven sacraments, transubstantiation, purgatory, the invocation, veneration, celibacy of the clergy, and auricular confession.

Trent, William Peterfield, an American author; born in Richmond, Va., Nov. 10, 1862; was graduated at

the University of Virginia in 1884; and in 1888 became Professor of English and of History in the University of the South. In July, 1900, he was appointed Professor of English Literature at Columbia University, New York city.

Trenton, city and capital of Mercer county and of the State of New Jersey; on the Delaware river, the Delaware & Raritan canal, and the Pennsylvania and other railroads; 57 miles S. W. of New York city; is noted for the extent and variety of its manufactures, which in 1909 had an output valued at $49,009,000, and included pottery and wire goods of all kinds, rubber and woolen goods, fire-brick and terra-cotta, and iron and steel; and, besides the State Capitol, contains the State Prison, State Insane Asylum, State School for Deaf Mutes, State Normal School, State Arsenal, Federal Building, seats of Protestant Episcopal and Roman Catholic bishops, and a Revolutionary Memorial Monument. The city was settled in 1679, and on Dec. 25, 1776, Washington attacked the British here after crossing the Delaware. Pop. (1920) 119,289; (1930) 123,356.

Trepanning, the operation of cutting a circular opening into the skull by means of a surgical instrument called a trepan or trephine. The operation is resorted to for the purpose of relieving the brain from pressure; such pressure may be caused by the depression of a portion of the cranium, or it may be produced by an extravasation of blood, or by the lodgment of matter betwixt the skull and the dura mater, occasioned by a blow upon the head or inflammation of the membranes of the brain.

Trescot, William Henry, an American diplomatist; born in Charleston, S. C., Nov. 10, 1822; assistant Secretary of State from June, 1860, till South Carolina seceded; settled in Washington in 1875, and resumed the practice of law; was counsel for the United States before the Fishery Commission at Halifax in June, 1877; was a commissioner with General Grant to arrange a commercial treaty with Mexico in 1882; and served in other important diplomatic capacities. He died May 4, 1898.

Trespass, in law, a physical interference with the person or property of another. However innocent the act, if it be voluntary, a legal wrong is done. Thus, if pursued by a wild beast you deliberately take refuge in another man's house, you commit a trespass; but if you rush there in mere blind fear, you do not. Again, if you drive in so careless a manner as to hurt any one, though unintentionally, this is a trespass. If animals or, indeed, any chattels are on a man's land doing damage, they may be seized and impounded till compensation be made.

Trèves, a city of Rhenish Prussia, on the Moselle, 69 miles S. W. of Coblenz and 111 S. W. of Cologne. It claims to be 1,300 years older than Rome, and contains many relics of its early days, including, in the Cathedral of SS. Peter and Helena, the famous seamless "Holy Coat." The city has been a center of war operations since its early Roman days; was the capital of the French Department of Sarre in 1794–1814; then fell to Prussia. Pop. (1926) 56,120.

Triangle, in geometry a portion of a surface bounded by three lines, and consequently having three angles. Triangles are either plane, spherical, or curvilinear. A plane triangle is a portion of a plane bounded by three straight lines called sides, and their points of intersection are the vertices of the triangle. Plane triangles may be classified either with reference to their sides or their angles. When classified with reference to their sides, there are two classes: (1) Scalene triangles, which have no two sides equal. (2) Isosceles triangles, which have two sides equal. The isosceles triangle has a particular case, called the equilateral triangle, all of whose sides are equal. When classified with reference to their angles, there are two classes: (1) Right-angled triangles, which have one right angle. (2) Oblique-angled triangles, all of whose angles are oblique; subdivided into (a) acute-angled triangles, which have all their angles acute; and (b) obtuse-angled triangles which have one obtuse angle. The sides and angles of a triangle are called its elements; the side on which it is supposed to stand is called the base, and the vertex of the opposite angle is called the vertex of

the triangle; the distance from the vertex to the base is the altitude. Any side of a triangle may be regarded as a base, though in the right-angled triangle one of the sides about the right angle is usually taken. The three angles of a plane triangle are together equal to two right angles, or 180°; its area is equal to half that of a rectangle or parallelogram having the same base and altitude; in a right-angled plane triangle the square of the side opposite the right angle is equal to the sum of the squares of the other two sides.

In music, a bar of steel, bent into the form of a triangle, having an opening at one of the lower angles, so that the sides are of unequal length. It is suspended by one angle and struck with a small rod, and sometimes introduced in brilliant musical passages.

Tribonianus, a Roman jurist of the 6th century, of Macedonian parentage, but born in Paphlagonia. He held under the Emperor Justinian the offices of quæstor, master of the imperial household, and consul. He is famous chiefly through his labors in connection with the Code of Justinian and the Pandects, or digest of Roman laws. He died in 545.

Tribune, in Roman antiquities, properly the chief magistrate of a tribe. There were several kinds of officers in the Roman state that bore the title. (1) The plebeian tribunes, who were first created after the secession of the commonalty to the Mons Sacer (A. U C. 260), as one of the conditions of its return to the city. They were especially the magistrates and protectors of the commonalty, and no patrician could be elected to the office. At their first appointment the power of the tribunes was very small, being confined to the assembling of the plebeians and the protection of any individual from patrician aggression; but their persons were sacred and inviolable, and this privilege consolidated their other powers, which, in the later ages of the republic grew to an enormous height, and were finally incorporated with the functions of the other chief magistracies in the person of the emperor. The number of the tribunes varied from 2 to 10, and each of these might annul the proceedings of the rest by putting in his veto. (2) Military tribunes were first elected in the year A. U. C. 310, in the place of the consuls, in consequence of the demands of the commonalty to be admitted to a share of the supreme power. This measure was not, however, a complete concession of their demands, but, in fact, evaded them in a great degree; for the tribunate was not invested with the full powers or honors of the consulate, not being a curule magistracy, and, though it was open to all the people, patricians were almost invariably chosen. The number of the military tribunes was sometimes six and sometimes three. For above 70 years sometimes consuls were elected and sometimes military tribunes; at last the old order was permanently restored, but the plebeians were admitted to a share of it. (3) Legionary tribunes, or tribunes of the soldiers, were the chief officers of a legion, six in number, who commanded under the consul, each in his turn, usually about a month; in battle each led a cohort. Also, a bench or elevated place; a raised seat or stand. Specifically, a throne of a bishop, and a sort of pulpit or rostrum, where a speaker stands to address an audience.

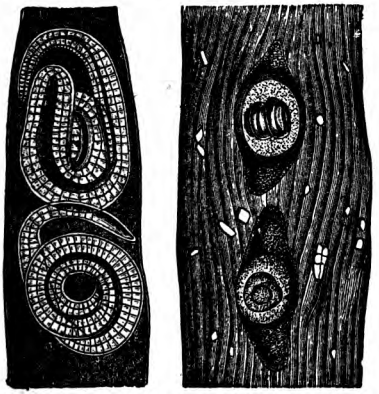
Triceps, in anatomy, a muscle, one extremity of which is composed of three distinct fasciæ.

Trichiasis, a most troublesome disease, a growing inward of the eyelashes, perhaps one, or three or four, which present their points toward the globe of the eye, while the others retain their natural position. Competent surgical aid should be obtained.

Trichina. The trichinæ met with in human muscle are minute immature worms, spirally coiled in small oval cysts, scarcely visible to the naked eye, measuring 1-78 inch in length and 1-13 inch in breadth. Sometimes the worms are not encysted, and measure 1-25 inch in length and 1-360 inch in breadth. The mature and reproductive trichinæ inhabit the intestinal canal of mammals, including man, and live for four or five weeks, attaining ability to reproduce on the second day of their introduction. The male is about 1-18 and the female 1-8 inch long. The eggs are hatched within the female, and as soon as the embryos are expelled they bore their way into the muscles. often

setting up trichiniasis. Thus the only way in which trichinæ can get into the human system is by being swallowed alive with pieces of imperfectly cooked muscle in which they are encysted. The pig is the great source of infection to man, as it is peculiarly liable to the presence of encysted trichinæ. Adult trichinæ do, or may, infest the intestinal canal of all animals in the muscles of which the larval forms have been found. These are, besides man, the pig, dog, cat, rabbit, rat, mouse, hedgehog, mole, and badger.

Trichina Spiralis, the name given to a peculiar nematoid worm which inhabits the muscles, usually of the pig. The viviparous females, originally living in rats, begin about eight days after entering the intestines of their second host, a pig, to give birth



TRICHINA SPIRALIS: MAGNIFIED.

to the larvæ, which pass into various parts of the body, especially the muscles, where they coil up in a sack, or cyst, which eventually becomes calcareous and whitish. When pork thus infected is eaten the worms are set free in the stomach of their third host (man), and in three or four days there become sexually mature, each female being capable of producing 1,000 young.

Trichiniasis, a disease produced by the presence of trichinæ within the human system, and within the bodies of other animals liable to infestation.

Trickett, William, an American lawyer; born in England, in 1840; was graduated at Dickinson College in 1868 and was admitted to the bar in 1876. He was made dean of Dickinson School of Law in 1890; was candidate for the Superior Court of Pennsylvania on the Democratic ticket in 1898. He was the author of various works on law.

Triclinium. In Roman antiquities, in early times, the whole family sat together in the atrium, or public room; but when mansions were built upon a large scale, one or more spacious banqueting halls commonly formed part of the plan, such apartments being classed under the general title of triclinia.

Tricolor, a flag or banner having three colors; specifically, a flag having three colors arranged in equal stripes or masses. During the revolution of 1789 in France, the revolutionists adopted as their colors the three colors of the city of Paris for their symbol. The three colors were first devised by Mary Stuart, wife of Francis II. The white represented the royal house of France; the blue, Scotland; and the red, Switzerland, in compliment to the Swiss guards, whose livery it was.

Tricoupis, Spiridion, a Greek statesman; born in Missolonghi, April 20, 1788. He served as private secretary to Lord Guilford in the Ionian Isles, but took his place among the patriots on the outbreak of the war of independence. From 1821, except during the presidency of Capo d'Istria, he was continually employed in administrative and diplomatic business; was thrice sent to London as envoy extraordinary; was Minister of Foreign Affairs and of Public Instruction (1843); Vice-President of the Senate (1844–49); and envoy extraordinary to Paris (1850). He died Feb. 24, 1873.

Tricycle, a three-wheeled machine for traveling on the road. It is an improvement on the old velocipede, and was introduced in its present form about 1878.

Trident, a three-pronged fork used by fishermen; is employed as the attribute of Poseidon (Neptune); and is frequent on coins of such Greek States as have Poseidon for patron deity. The conventional figure of Bri-

tannia bears a trident as the symbol of sovereignty over the sea.

Tridentine Creed, in Church history, the profession of the Tridentine faith, published by Pope Pius IV., in 1564. It originally consisted of the Nicene creed, with a summary of the Tridentine definitions, to which is now added a profession of belief in the decrees of the Vatican Council.

Trieste, since 1918 a city and port of Italy, and most considerable trading town on the Adriatic; at the head of the Gulf of Trieste, an arm of the Gulf of Venice; 370 miles S. S. W. of Vienna. In 1849 it was constituted an imperial free city, and attached and belonging to it is a territory 36 square miles in extent. The manufactures are very extensive, including shipbuilding, rope making, and the manufacture of soap, rosoglio, white lead, leather, etc. The city was captured by Venice in 1203, and its harbor was blockaded by an Italian fleet for several months in 1848. It has two great shipbuilding plants. Assigned to Italy after World War. Pop. (1926 Est.) 242,059.

Triforium, in Gothic churches, a gallery between the arches of the nave and the roof of the aisles below the clere-story lighted by windows opening into the interior of the building.

Trigger-fishes (Balistes,) a genus of teleostean fishes, so named from the peculiar structure of the dorsal fin, the first ray or spine of which can only be depressed by the movement of the second ray.

Trigona, in entomology, a genus of social bees, forming their nests within hollow trees or the cavities of rocks in America, Sumatra, Java, etc.

Trigonia, in botany, tropical American trees with opposite, stipulate leaves, their inflorescence in panicles, irregular flowers, and long, hairy seeds.

Trigonometrical Survey, a survey of a country carried out from a single base by the computation of observed angular distances; but the term is usually confined to measurements on a large scale embracing a considerable extent of country and requiring a combination of astronomical and geodetical operations. A trigonometrical survey may be undertaken either to ascertain the exact situation of the different points of a country relatively to each other and to the equator and meridians of the terrestrial globe, for the purpose of constructing an accurate map, or to determine the dimensions and form of the earth by ascertaining the curvature of a given portion of its surface, or by measuring an arc of the meridian. The most minute accuracy and the most perfect instruments are required in all the practical parts of such operations, and regard must be had to the curvature of the earth's surface, the effects of temperature, refraction, altitude above the level of the sea, and a multitude of other circumstances which are not taken into account in ordinary surveying. In a trigonometrical survey the whole area to be surveyed is divided into a system of triangles, commencing from a carefully measured base, which forms the side of the first triangle. These are further intersected by a network of smaller triangulations, which will fix all the secondary points on the surface, and finally the details of the ground are completed by measurement and the theodolite.

Trigonometry, originally the branch of geometry which had to do with the measurement of plain triangles. This gradually resolved itself into the investigation of the relations between the angles of the triangle, for the simple reason that all triangles having the same set of angles are similar, so that if, in addition, one side is given the other two at once follow. It is easy to show from the Sixth Book of Euclid that, if we fix the values of the angles of a triangle, the ratio of the sides containing any one of these angles is the same whatever be the size of the triangle. This ratio is a definite function of the angles; and it is with the properties of such ratios that trigonometry has now to deal.

Trilobite, an extinct and widely-distributed family of palæozoic crustacea, nearly allied to the Phyllopoda. Trilobites are especially characteristic of the Silurian strata; about a dozen genera appear in the Devonian, three or four in the Carboniferous, and none higher. They comprehend those species in which the body is divided

into three lobes, which run parallel to its axis. They fed on small water animals, and inhabited gregariously and in vast numbers the shallow water near coasts. When attacked they could roll themselves into a ball. No antennæ or limbs have yet been detected; "still," says Owen, "there can be no doubt they enjoyed such locomotive powers as even the limpet and chiton exhibit." The lenses of the eye are frequently beautifully preserved so as to be perceptible by the naked eye. The species vary greatly in size, some being no larger than a pin's head, while one is found 18 inches long. Probably some so-called species are only larval or transition forms of others.

Trilogy, a series of three dramas, which, though complete each in itself, bear a certain relation to each other, and form one historical and poetical picture. The term belongs more particularly to the Greek drama. In Athens it was customary to exhibit on the same occasion three serious dramas, or a trilogy, at first connected by a sequence of subject, but afterward unconnected, and on distinct subjects, a fourth or satyric drama being also added, the characters of which were satyrs. Shakespeare's "Henry VI." may be called a trilogy.

Trimble, Isaac Ridgeway, an American military officer; born in Culpeper co., Va., May 15, 1802; was graduated at the United States Military Academy in 1822. When the Civil War began he was in the West Indies, but hastened to Baltimore, where he was given command of the non-uniformed volunteers organized for the purpose of defending that city against Union troops. In May, 1861, he became colonel of engineers in the Confederate army. He was promoted Major-General in April, 1863, and during the battle of Chancellorsville had command of a division of the 2d corps of Jackson's army. On the third day of the engagement at Gettysburg he took part in the famous charge of Gen. George E. Pickett. He there lost a leg and was taken prisoner. He was not exchanged till April, 1865, after being detained a prisoner at Johnson's Island for 21 months. He hastened to join Lee, but when he arrived in Lynchburg he discovered that the Confederate army had surrendered the day before. He died in Baltimore, Md., June 2, 1888.

Trimurti, in comparative religion, the later Hindu triad — Brahma, Vishnu, and Siva — considered as an inseparable unity. The Padma Purana, which, as a Purana of the Vaishnavas, assigns to Vishnu the highest rank, thus defines the Trimurti; "In the beginning of creation the great Vishnu, desirous of creating the world, produced from the right side of his body himself as Brahma; then, in order to preserve the world, he produced from the left side of his body Vishnu; and in order to destroy the world he produced from the middle of his body the eternal Siva. Some worship Brahma, others Vishnu, one, yet threefold, creates, preserves, and destroys; therefore let the pious make no difference between the three."

Trine, Ralph Waldo, an American author; born in Mt. Morris, Ill., Sept. 9, 1866; was graduated at Knox College, Galesburg, Ill., in 1891, and then pursued studies in history and social and political science at Johns Hopkins University. He became deeply interested in social problems; was made director of the American Humane Society and the Massachusetts Society for the Prevention of Cruelty to Animals. His publications include: "The Life Books" (3 vols.); "Character-Building Thought Power"; etc.

Trinidad, one of the British West India Islands, with which the island of Tobago is connected administratively; 7 miles from the coast of Venezuela, the Gulf of Paria (an extremely safe anchorage) lying between. It is about 50 miles long; area, 1,755 square miles (Tobago, 114); pop. (1926 Est.) 387,470. A remarkable phenomenon is a pitch lake near the village of La Brea, composed of bituminous matter floating on the surface of fresh water, about 3 miles in circumference, and 138 feet above the sea. The soil is very rich and productive. The climate is hot and moist, but not unhealthy. The chief town, Port of Spain, is one of the finest towns in the West Indies (pop. 70,146). The most important products are cocoa, sugar, rum, molasses, coffee, cocoanuts, tobacco, bitters, asphalt, and fruit. A third of the trade

is with Great Britain, and a fourth with the United States. About one-third of the population is composed of East Indians and their descendants; the remainder, of mixed blood.

Trinidad was discovered by Columbus in 1498, but no permanent establishment was founded there till 1532 by the Spaniards. It suffered at the hands of the English (Sir Walter Raleigh in 1595), the Dutch (1640), and the French (1677 and 1690). In 1797 it first fell into the hands of the British, who were confirmed in the possession of it in 1802.

Trinity, a term used to express the doctrine of Three Persons in one Godhead, which is held alike by the Roman, Greek, and Anglican Churches, and by the greater number of Nonconformist communions. It is indicated in the Apostles' Creed, stated more explicitly in the Nicene Creed, and set out at length in the Athanasian Creed. The First Article of the Church of England states the doctrine in terms that would be accepted by sister churches, and by orthodox dissenters generally: "There is but One Living and True God. . . . And in Unity of this Godhead there be Three Persons, of one substance, power, and eternity; the Father, the Word, and the Holy Ghost." The Council of Nice (A. D. 325) by affirming the divinity of Christ, and that of Constantinople (A. D. 381) by affirming the divinity of the Holy Ghost, while insisting on the Unity of God, declared the doctrine of the Trinity in Unity to be the doctrine of the Church. From that time it was never called in question except by a few obscure sects, till the Reformation, when Unitarianism became one phase of Protestantism.

Trinity Bay, a large bay on the N. E. coast of Newfoundland. The peninsula of Avalon is nearly surrounded by it. Its chief ports are Trinity and Heart's Content.

Trinity College, an American educational institution, established in Hartford, Conn., in 1823. It bore the name of Washington College till 1845. The original site of the campus was that now occupied by the State Capitol. In 1878 the ground was sold to the city of Hartford, and 78 acres were secured about a mile S. of its former location.

Trinity College, a coeducational institution in Durham, N. C.; founded in 1853 under the auspices of the Methodist Episcopal Church.

Trinity College, a famous institution in Cambridge, England; founded by Henry VIII., in 1546.

Trinity College, a noteworthy college in Oxford, England; founded by Richard de Hoton, Prior of Durham, in 1290.

Trinity College, or **The University of Dublin,** the largest and most important educational institution in Ireland. It is believed to have been founded by Queen Elizabeth in 1591, though some authorities assert that she merely endowed and Protestantized the school.

Trinity House, a name borne by five maritime societies of Great Britain; situated in London, Hull, Newcastle-on-Tyne, Leith, and Dundee. Probably all, or most of them, were originally partly religious and partly secular establishments founded by seamen, their chief original objects being probably mutual assistance and the care of aged and infirm seamen. From the 4th century onward various public duties and privileges were assigned to them by royal charters or acts of Parliament, such as providing lighthouses, buoying channels, and licensing pilots; and powers were given to them to levy dues on shipping or cargoes. With one important exception, these duties and powers have been reduced or withdrawn. Dundee House is now only a benefit society. Leith retains its public duties as a pilotage authority, as also do Newcastle and Hull, while the last also looks after the lighthouses and buoys of the Humber. All of them continue to give pensions, or homes and pensions, to members, and some assistance to destitute seafarers.

On the other hand, the London Trinity House, called the Corporation of Trinity House of Deptford Strand, is entrusted with the management of the general lighthouse and buoyage system of England and Wales, and with a supervising authority over local lights and buoys, and has besides a partial control over the lighting and

buoyage systems of Scotland and Ireland.

Trinity Sunday, the Sunday after Whitsunday. It was definitely established as a Church festival by Pope John XXII. in 1334. All the principal feasts occur in the half-year between Advent Sunday and Trinity, and all the Sundays from Trinity to Advent, are called Sundays after Trinity.

Trio, a musical composition for three voices or for three instruments.

Triple Alliance, an alliance between the States-General and England, against France, for the protection of the Spanish Netherlands; was ratified Jan. 23, 1668. Sweden joined the league, April 25, and it then became known as the Triple Alliance. Another called the Second Triple Alliance, between England, France, and Holland, to oppose the designs of Cardinal Alberoni, the Spanish minister; signed by the English and French, Nov. 28, 1716, and by the Dutch at The Hague, Jan. 4, 1717. A Triple Alliance between Great Britain, Russia, and Austria, was concluded against France at St. Petersburg, Sept. 28, 1795. A fourth one was formed about 1883 between Germany, Austria-Hungary, and Italy against Russia and France; but after the outbreak of the World War Italy withdrew and declared war against Austria, May 23, 1915.

Triplet, in music, a combination of three notes played in the time of two.

Tripod, in classical antiquity, a bronze altar, having three legs or feet, and frequently also three rings at the top to serve as handles. A tripod was one of the attributes of Apollo, and originated in the custom of seating the pythoness, or prophesying priestess, in a triple-footed seat, over the vapor which ascended from a mystic cavern at Delphi, and which was believed to have the power of producing sacred inspiration, and the ability of foretelling future events. Highly ornamented tripods of similar form, made of precious metals, were given as prizes at the Pythian and Nemean games and elsewhere, and were frequently placed by grateful worshipers as votive offerings in the temples of different gods.

Tripoli, a former vilayet or province of Turkey in Northern Africa; since the war of 1911–1912, a colony of Italy, including all of Tripolitania and Cyrenaica. Bounded on the W. by Tunis, on the S. (very vaguely) by the Libyan Desert and Fezzan, on the E.— if we include the plateau of Barca — by Egypt, and on the N. by the Mediterranean Sea; area, 406,000 square miles; pop. (Est.) 1,000,000. natives. Tripoli is less mountainous than the rest of Barbary. There are no rivers, and rain seldom falls during the summer, but the heavy dew supports vegetation in favored spots. The climate is extremely uncertain. The coast region (about 1,100 miles in length) is very fertile about Tripoli and Mesurata, where all sorts of tropical fruits, grain, wine, cotton, madder, etc., are produced; but further E. along the shores of the Gulf of Sidra, reigns sandy desolation. The interior yields senna, dates, and galls, and the carob and lotus are indigenous. Sheep and cattle are reared in great numbers, and there is a hardy breed of small but excellent horses, besides strong and beautiful mules. The commerce of the country consists in exporting, principally to Malta and the Levant, the products of the country and of the interior of Africa (gold dust, ivory, natron, and ostrich feathers), which are brought hither in caravans across the desert. The imports (which consist chiefly of European manufactures) have been declining gradually of late years, owing partly to the new direction which the trade of Central Africa is assuming, and partly to the abolition of the slave trade, which has stopped the demand for many of the commodities that supported the traffic. Nevertheless Tripoli is still an important mart of the caravan trade with the interior. Tripoli was subdivided into four livas or provinces — Tripoli, Benghazi (Berenice), Mesurata, and Gadames.

TRIPOLI, the capital of the present district of Tripolitania, is believed to be the Œa of antiquity, called in Arabic Tarâbulus, or Tarâbulus Gharb ("Tripoli of the West"). It lies on the edge of the desert, on a point of rocky land projecting into the Mediterranean and forming a bay. It is a

typical Moorish city irregularly built, surrounded by high bastioned walls and celebrated for its beautiful gardens. There are many mosques, besides several large churches. Though the majority of the inhabitants are Moslems, nearly all the trade is in the hands of Jews and Christians. Pop. (1924) Est. 75,000.

Tripolitan War, a war between the United States and Tripoli in 1801–1805. It was caused by the refusal of the United States to increase its payment for immunity from the depredations of the Tripolitan corsairs. The conflict was attended by thrilling exploits on the part of the Americans, who brought Tripoli to terms in 1805, and again in 1815 compelled the Tripolitan ruler to pay heavily for violation of neutrality.

Tripp, Bartlett, an American diplomatist; born in Maine, about 1842; was graduated at Colby University in 1861, and at the Albany Law School in 1866; removed to Yankton, S. D., in 1869, and there engaged in law practice. He was president of the First Constitutional Convention in 1883; chief justice of the Supreme Court of Dakota Territory in 1885–1889; minister to Austria in 1893–1897; and chairman of the commission of 1899 which arranged a settlement between the United States, England, and Germany, concerning Samoa. He died Dec. 8, 1911.

Tripp, Seth D., an American inventor; born in Rochester, Mass., in 1826. He invented a machine for pegging shoes in 1846, and also sole molders, rolling machines, heel polishers, shank cutters, beating-out and welt-cutting machines, and sole dyers. He died in Lynn, Mass., Jan. 7, 1898.

Trippant, in heraldry, a term applied to beasts of chase, as passant is to beasts of prey, etc. The animal is represented with the right foot lifted up, and the other three on the ground. Counter trippant is when two animals are borne trippant contrary-ways, as if passing each other out of the field.

Trireme, in classical antiquity, a galley or vessel having three ranks or benches of oars on each side, a common class of war ship among the ancient Romans, Greeks, Carthaginians, etc. They were also provided with large square sails, which could be raised during a fair wind, to relieve the rowers.

Tristan, or **Tristram,** the center figure of a circle of old Celtic myths, which with countless modifications and additions afterward appeared in all the chief European literatures. According to the story, Tristan, son of Rouland Rise, Lord of Ermonie, and Blanche Fleur, sister of Mark, King of Cornwall, was sent by his uncle to woo vicariously and bring home as bride to the British king the fair Isolt, Yseult, or Ysonde, princess of Ireland. Tristan does so, but they unfortunately partake of a love charm which is not intended for them. They fall passionately but hopelessly in love with each other. The intrigue was carried on for years, and the story narrates the adventures — grave and gay — which resulted from the somewhat difficult position of the actors. They died simultaneously, and the king generously allowed them to be buried side by side. But "even in our ashes live their wonted fires," a vine and a rose-bush grew from the graves, and, meeting, twined amorously their branches together.

Triton, in classical mythology, a powerful sea deity, son of Poseidon (Neptune) by Amphitrite, or, according to some, by Sileno or Salacia. He dwelt with his father in a golden palace on the bottom of the sea. He could calm the ocean, and abate storms. He was generally represented as blowing a shell, and with a body above the waist like that of a man, and below like a dolphin. Many of the sea deities were called Tritons by the poets.

Triton, in zoölogy: (1) A genus of aquatic salamanders, with 16 species, widely distributed in temperate and sub-tropical regions. In North America, Diemictylus viridescens is one of the most common species. (2) A genus of marine gastropods, with 100 recent species, from the West Indies, Mediterranean, Africa, India, China, the Pacific, and Western Australia, ranging from low water to 10 or 20 fathoms, and one minute species has been dredged at 50 fathoms. The

Great Triton is the conch blown as a trumpet by the Australian and Polynesian natives.

Triumph, in Roman antiquities, a grand procession, in which a victorious general entered the city by the Porta Triumphalis, in a chariot drawn by four horses, wearing an embroidered robe, an under garment flowered with palm leaves, and a wreath of laurel round his brows. He was preceded by the prisoners taken in the war, the spoils of the cities captured, and pictures of the regions subdued. He was followed by his troops; and, after passing along the Via Sacra and through the Forum, ascended to the Capitol, where he offered a bull in sacrifice to Jove.

Under the empire, the prince being sole Commander-in-Chief of the armies of the State, all other military commanders were regarded merely as his legati, and it was held that all victories were gained under his auspicia, however distant he might be from the scene of action; consequently he alone was entitled to the triumph.

A naval triumph differed from a military one only in being on a smaller scale, and in being characterized by the exhibition of nautical trophies, such as beaks of ships. An ovation was an honor inferior to a triumph, the chief difference being that in the former the victorious general entered the city on foot, and in later times on horseback. The Senate claimed the exclusive prerogative of granting or refusing a triumph.

Triumvir, in Roman government, one of the three men united in office. The triumvirs were either ordinary magistrates or they were extraordinary commissioners appointed to jointly execute any office.

Triumvirate, a coalition of three men in office or authority; specifically applied to two great coalitions of the three most powerful individuals in the Roman empire for the time being. The first of these was effected in the year 60 B. C., between Julius Cæsar, Pompey, and Crassus, who pledged themselves to support each other with all their influence. This coalition was broken by the fall of Crassus at Carrnæ in Mesopotamia; soon after which the civil war broke out, which ended in the death of Pompey, and establishment of Julius Cæsar as perpetual dictator. After his murder, 44 B. C., the civil war again broke out; and after the battle of Mutina, 43 B. C., Antony, Octavius, and Lepidus coalesced, thus forming the second triumvirate. They divided the provinces of the empire; Octavius taking the West, Lepidus Italy, and Antony the East.

Trivium, the name given in the Middle Ages to the first three of the seven liberal arts — grammar, rhetoric, and logic. The other four, consisting of arithmetic, music, geometry, and astronomy, were called the quadrivium.

Trocha, a Spanish word denoting a military highroad. The trocha played an important part as a barrier in the Cuban insurrection of 1895–1898. It consisted of a cleared space 150 to 200 yards wide, stretching through an apparently impassable jungle for 50 miles, bordered by fallen trees and a maze of barbed wire. Through the center of the clearing ran a single track military railroad, and on one side of that a line of forts.

Trochee, in prosody, a foot of two syllables, the first long and the second short.

Trochidæ, a family of gasteropodous mollusks. In the genus Trochus the shells are top-shaped, and hence are popularly known as topshells. Many of the shells are extremely beautiful, and are used for adorning headdresses, necklaces, etc., the outer layers being removed.

Trochilidæ, the humming birds, a family of insessorial birds, containing above 300 species, divided into about 75 genera or sub-genera. The Trochilidæ include some of the smallest known birds, many of which are remarkable for the wonderful splendor of their plumage. They are active little birds, and from the structure of their frames, it is apparent that they were intended to pass most of their time on the wing. Their food consists of small insects, and perhaps the nectareous juices of flowers, which their tongue is beautifully fashioned for obtaining. Their wings are very long and narrow, and they are, by means of the rapid motion given to them, able to balance

themselves in the air, hovering round flowering shrubs and plants, probing their tubular nectaries, and at the same time emitting a pretty loud humming noise, caused by the concussion of their wings with the air; whence their English name "humming birds." They are natives of America, and are found from one extent of the continent to the other, though in greatest numbers in the tropical parts, in the deltas, and along the banks of the great rivers both of the North and South.

Trochilium, in entomology, the clearwing; a lepidopterous insect with partially transparent wings. The currant and peach-tree borers are common examples. The caterpillar feeds within the stems of currant bushes, the birch, the oak, the apple, various willows, etc.

Trochu, Louis Jules, a French military officer; born in Le Palais, France, March 12, 1815; was educated at St. Cyr; engaged in the Algerian, Crimean and Italian campaigns. At the outbreak of the Franco-Prussian War (1870) he was made Governor of Paris, and when the republic was proclaimed he was intrusted with the defense of the city, a position which he held till the capitulation. He was elected to the National Assembly in 1871 and retired to private life in 1873. Died Oct. 7, 1896.

Trogon, beautiful tropical birds, with 24 species, ranging from Paraguay to Mexico, and W. of the Andes in Ecuador.

Trojan War, The, a legendary war which forms the theme of the "Iliad" of Homer. The story briefly told is that Paris (Alexander), son of Priam, King of Troy, carried off Helen, wife of Menelaus, King of Sparta; that the Achæan princes, under the command of Menelaus' brother, Agamemnon, King of Mycenæ, undertook to recover Helen; that the Achæans, having besieged Troy for nine years, eventually sacked the city and recovered Helen. These events were regarded as historical not only by the Greeks themselves, but by the moderns as late as the first half of the 19th century, and a date (1184 B. C.) was assigned with much precision and confidence to the fall of Troy. But the remarkable revolution in the views of scholars about mythology, begun by Lobeck in 1829, and by the brothers Grimm, led to the belief that the war was legendary. Many of the incidents were shown to be myths common to most Indo-European nations. The account which Homer left to us of the struggle to avenge the wrongs and woes of Helen is essentially a story in which the main chain of causation is superhuman, in which the gods mingle visibly with men, and the heroes themselves are the sons or husbands of immortal beings. The legend of Troy was a favorite subject with the poets of the Middle Ages and took varied forms differing from the Greek version of the event and dwelling on the heroes descended from the Trojans.

Trolley, a word meaning a pulley running on an overhead wire. In electric railways this pulley is at the top of a long rod that acts as a conductor to transmit the electric current to the motor of a street car. By extension, the word trolley is applied to the car and to the system as a whole.

Trolley Fire Engine, a fire engine differing from those in ordinary use, merely by its being adapted to be carried on trucks fitted with motors that can run on a trolley line.

Trollope, Anthony, an English novelist; born in London, England, April 12, 1815. He was educated at Harrow and Winchester; in 1834 became a clerk in the postoffice, and in 1841 was appointed clerk to a post-office surveyor in Ireland. His Irish experiences gave him material for his first novels. His first success was "The Warden"; followed by "Barchester Towers"; etc. He also published accounts of his travels. He died in London, Dec. 6, 1882.

Trollope, Frances M., an English author; mother of Anthony; born near Bristol, England, in 1780. In 1829 she visited the United States, and afterward published a volume entitled "Domestic Manners of the Americans." She followed this with the novel "The Refuge in America." She died in Florence, Italy, Oct. 6, 1863.

Trollope, Thomas Adolphus, elder brother of Anthony; born April 29, 1810. He was a constant contributor to English periodicals, and was

Italian correspondent of the New York "Tribune." Among his many books are: "A Summer in Brittany"; "What I Remember"; etc. He died in Clifton, England, Nov. 11, 1892.

Trombone, a large, deep, and loud-toned instrument of the trumpet kind, the name being an augmentative of tromba, a trumpet. It consists of two tubes, so constructed that one may slide in and out of the other, and thus form one tube that can be lengthened at will and made of varying pitch. There are three kinds of trombones, called after their compass the alto, tenor, and bass trombones. Soprano trombones have also been made, but they are rarely used. Some of these instruments are fitted with pistons, whence they are called valve trombones. Also a powerful reed stop in the organ, of 8 feet or 16 feet scale on the manuals and 16 feet or 32 feet on the pedals. In ordnance, a form of blunderbuss for boat service.



TENOR TROMBONE.

Tromometer, an instrument for measuring earth tremors.

Tromp, the water-blowing engine; used as a furnace blast in some parts of America, Carniola, and Savoy.

Tromp, Marten Harpentzoon Van, a Dutch naval officer; born in Briel, Holland, in 1597. He began to serve under his father in the navy at 10 years of age, gradually rose to distinction, and in 1637 attained the rank of lieutenant-admiral; in which capacity he served against the Spaniards, and captured many of their ships. After commanding in several battles against the English, this great seaman fell in the engagement with Monk, off the coast of Holland, Aug. 8, 1653. His son, Cornelius Van Tromp, born in Rotterdam, Holland, Sept. 9, 1629, rose also to eminence as a naval commander, and on De Ruyter's death, was appointed lieutenant-admiral-general of the United Provinces. He died May 29, 1691.

Trondhjem, recently changed to Nidaros, a seaport of Norway, capital of the Amt (province) of the Nid in the Trondhjem-Fjord; 250 miles N. of Christiania. N. of the town, in the fjord, is the fortified island of Munkholmen, with the remains of a mediæval monastery. Trondhjem was founded in 996 by Olaf Trygvason, and became in 1152 the seat of an archbishop. The present name is the original of the ancient capital. It was taken by the Swedes after a siege of nine weeks, and has often been nearly destroyed by fire. Pop. (1920) 54,520.

Troostite, a variety of willemite, occurring in large opaque crystals, which are mostly impure from the presence of iron and manganese. Found with franklinite in New Jersey.

Tropæolaceæ, Indian cresses; an order of hypogynous exogens, alliance Malvales; smooth, twisting or twining herbs of tender texture and acrid taste, from the temperate parts of America.

Trope, in rhetoric, a term applied to a word or expression diverted from its original to a figurative signification, and thus including allegory, irony, metaphor, metonymy, synecdoche, etc.

Trophi, in entomology, the organs about the mouth in insects. These are of two types, the masticatory and the suctorial, which are sometimes modified and occasionally combined.

Trophis, a small tree found in both the East and West Indies. T. americana, the Ramoon tree, is about 20 feet high, and bears pleasantly flavored drupes about the size of grapes. It is a native of the West Indies, where the leaves and twigs are eaten by cattle.

Trophonius, the fabled builder of the temple of Delphi, after his death was reverenced as a hero, and had a famous oracle in a cavern near Lebadeia in Bœotia.

Trophy, a monument or memorial in commemoration of a victory. It consisted of some of the arms and other spoils of the vanquished enemy.

hung upon the trunk of a tree or a pillar by the victors, either on the field of battle or in the capital of the conquered nation. If for a naval victory it was erected on the nearest land.

Tropic, in astronomy, one of the two small circles of the celestial sphere, situated on each side of the equator, at a distance of 23° 28′, and parallel to it, which the sun just reaches at its greatest declination N. or S., and from which it turns again toward the equator, the N. circle being called the Tropic of Cancer, and the S. the Tropic of Capricorn.

In geography, one of the two parallels of terrestrial latitude corresponding to the celestial tropics, being at the same distance from the terrestrial equator as the celestial tropics are from the celestial equator. The one N. of the equator is called the Tropic of Cancer and that S. of the equator the Tropic of Capricorn. Over these circles the sun is vertical when his declination is greatest, and they include that portion of the globe called the torrid zone, a zone about 47° wide, having the equator for a central line.

The regions lying between the tropic of Cancer and the tropic of Capricorn, or near them on either side, are called the tropics.

Tropic Bird, a popular name for any species of the genus Phaëton. They are tropical sea birds, in habits and general appearance approaching gulls and terns, and resembling the latter in their mode of flight. Their powers of flight are great, and they are usually seen at considerable distances from the land.

Trotter, Newbold Hough, an American artist; born in Philadelphia, Pa., Jan. 4, 1827; was graduated at Haverford College in 1845; engaged in mercantile business till 1858, when he applied himself to art. When the Civil War broke out he joined the Germantown Home Guards and took part in the battle of Antietam. After the war he practised his profession till his death. He was selected by the United States government to paint all the mammalia of North America to be issued by the government. His historic paintings include three pieces representing the progress of travel in Pennsylvania during 50 years. Died in Atlantic City, N. J., Feb. 21, 1898.

Trotting Horse, a horse trained to trot at high speed without breaking into a gallop. Trotting horses are of two distinct races: (1) The Russian, which is Arabian on a Flemish stock, attaining high speed, but with bad knee action; (2) the American, which is probably both Barb and Arabian on an English stock. Some of the fastest American trotters have done a mile in a few seconds over two minutes.

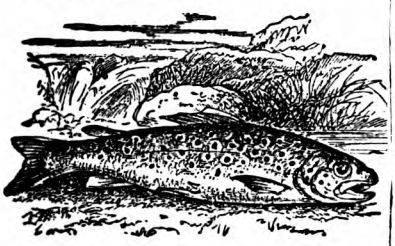
Troubadour, one of a class of poets which appeared first in Provence, in the S. of France, at the end of the 11th century. They were the inventors of a species of lyrical poetry almost entirely devoted to romantic and amatory subjects, and generally very complicated in its meter and rhymes. They flourished till the end of the 13th century.

Troubetzkoy, Amelie (Rives) (Chanler) Princess, an American novelist. See RIVES.

Trous-de-loup (wolf-traps), a military term for trap-holes or pits dug in the ground in the form of inverted cones or pyramids, in order to serve as obstacles to the advance of an enemy, each pit having a pointed stake in the middle. They were formerly much used, and the principle is still retained in modern obstructions.

Trout, a term applied generally to various species of fishes belonging to the salmon family. The best-known species, and that which par excellence receives the name, is the common trout, a fish which inhabits clear and running streams, and is mostly to be found tenanting some special nook from which it has to be warily drawn by the fly of the angler. The average weight of the common trout is from three-fourths to one pound. Fishes which exceed one pound in weight may be regarded as exceptionally fine specimens. The trout is found in all the large streams and lakes of Great Britain and of Northern Europe at large. A second species of trout is the salmon trout, which closely resembles the salmon in its general habits, especially in those relating to migration to the sea, and returning to the rivers

to spawn. Certain species of trout are confined to certain lakes or streams, and are not found outside the bounds of these waters. In such cases special markings indicate the specific character of the fishes.



COMMON RIVER TROUT.

Trouvere, a name given to a member of the class of ancient poets of Northern France, corresponding to the troubadour of Provence.

Trover, in law, a species of action on the case which is employed to try a disputed question of property in goods and chattels. The action is brought on a simple allegation that the defendant converted to his own use, or wrongfully deprived the plaintiff of the use and possession of the plaintiff's goods. In this action the plaintiff recovers damages equal to the value of the thing converted, but not the thing itself.

Trowbridge, John, an American scientist; born in Boston, Mass., in 1843; was graduated at the Lawrence Scientific School, Harvard University, in 1866; served as instructor there in 1866–1869. He was assistant Professor of Physics at the Massachusetts Institute of Technology in 1869–1870. He afterward founded a laboratory course in physics at Harvard University and was Professor of Experimental Physics in 1880–1888. In the latter year he accepted the chair of applied science in the same institution. From 1884 he was also Director of the Jefferson Physical Laboratory at Harvard. In 1878 he was elected a member of the National Academy of Sciences.

Trowbridge, John Townsend, an American author; born in Ogden, N. Y., Sept. 18, 1827. He began his literary career in 1846, and in 1850 became editor of "Our Young Folks." He died Feb. 12, 1916.

Trowbridge, William Petit, an American engineer; born near Birmingham, Mich., May 25, 1828; was graduated at West Point in 1848; superintended the erection of a self-registering magnetic observatory in Key West; was chief engineer in the construction of the fortifications at Willett's Point, on Governor's Island, and other points, and Professor of Engineering at Yale and Columbia Universities. Died Aug. 12, 1892.

Troy, city and capital of Rensselaer county, N. Y.; at the head of steamboat navigation on the Hudson, near the Erie and Champlain canals and the mouth of the Mohawk river, and on the New York Central & Hudson River and other railroads; 6 miles N. of Albany; has a large traffic by water with Atlantic coast and Canadian points; is one of the most important of Eastern manufacturing cities, having (1909) an output valued at $37,980,000, and producing iron and steel goods, shirts, collars, and cuffs, cotton and knit goods, stoves, railroad cars and wheels, brick, lumber, and beer. Troy is the home of modern laundry work, and the seat of the Rensselaer Polytechnic Institute, Emma Willard School, La Salle Institute, St. Peter's Academy, and a State Asylum for the Insane. Oakwood Cemetery contains the Earl Crematory, the most costly one in the country. Pop. (1930) 72,763.

Troy, or Troja, in classical legend and geography, the name of a district in the N. W. part of Mysia, in Asia Minor, and of a city situated in it. The latter was also called Ilium, and the former Troas. According to the account of Homer, the city was situated on ground rising above the plain formed by the rivers Scamander and Simois. On the S. E. was a hill, which was a spur of Mount Ida, and on which were the acropolis of the Trojans called Pergamum, the palaces of the king, and the temples of the gods. There have been various opinions respecting the site of the ancient city, and many efforts made to reconcile

the present topography with the geographical statements made in the Homeric poems, the most important work in this line being the excavations of Schliemann in the Troad, at the mound of Hissarlik, long the traditional site of Troy.

Schliemann excavated Hissarlik, and came first on the remains of the Græco-Roman town, Novum Ilion, or New Troy; below it he dug out the ruins of four village settlements, one below another; below them he came on "the burnt city," and finally on the lowest, the oldest, the first city. This yielded in the way of relics principally pottery and stone implements. Metals were practically unknown to its inhabitants, who were plainly a settled pastoral and agricultural people. The interval that elapsed between the desertion and decay of this first city and the foundation of the next must have been long, for a layer of earth 1 foot 9 inches deep intervenes between the debris of the first and the second or "burnt city." The inhabitants of this city were, however, still in the stone age; but the number of gold and silver relics, and the presence of some copper implements, point to the approach of the bronze age, and seem to indicate a transition from the age of stone to that of metals. The two most important facts in connection with this city are the discovery of what Schliemann believed to be "Priam's Treasure" and the evidence that the city was destroyed in a conflagration. The treasure consists of big diadems of gold, chains and pendants of gold, golden earrings, all packed in a silver jar, bars of silver, 8,700 small gold rings, disks, buttons, and small bars of gold, silver vases, gold cups, electrum cups, silver daggers, etc. The whole of this treasure had been packed together and stowed away probably in a secret chamber constructed in the acropolis wall.

Troy Weight, a system of weights used for gold, silver, platinum, and precious stones. The Troy pound contains 12 ounces, 240 pennyweights, and 5,760 grains, being thus less than the avoirdupois pound, which contains 7,000 grains. The name Troy was given to the standard pound in 1495.

Troyes, the Augustobona, later Civitas Tricassium of the Romans, a town in France; capital of the Department of Aube; on the Seine, 100 miles E. S. E. of Paris. The principal edifices are the cathedral, a fine Gothic building; the churches of St. Urbain and St. Madeleine; the town house; the prefecture, a public library, museum, etc. Being at the center of an important agricultural region, it has a large transit trade. The manufactures chiefly consist of cottons, woolens, hosiery, soap, artificial flowers, paper, gloves, etc. Pop. (1926) 58,321.

Truant School, a school for truant or vagabond children. In the United States, the establishment of schools purely of such a nature is quite recent. In 1850, Massachusetts passed a law permitting the punishment of truancy by confinement. New Hampshire, New York, Rhode Island, and Connecticut made similar legislation before 1865; and New York and other cities made like provision; but where the law was not a dead letter, habitual truants were classed as "juvenile disorderly persons" and were sent to almshouses or reformatories. Many States and cities provide for the arrest of truants and their being replaced in the public schools.

Truce, a suspension of arms by agreement of the commanders of opposing armies; a temporary cessation of hostilities, either for negotiation or other purpose.

Truck System, the practice of paying workmen in goods instead of money. The custom has been abolished in most of the United States.

True, Alfred Charles, an American statistician; born in Middletown, Conn., June 5, 1853; was graduated at Wesleyan University, Conn., and studied at Harvard University; was an instructor at Wesleyan University in 1884–1888. He then entered the United States Department of Agriculture; was editor in the office of the experiment station in 1889–1890, was vice-director of the same in 1891–1892 and director in 1893–1915. He was also made editor-in-chief of the "Experiment Station Record" and the "Experiment Station Work" and took charge of investigations in agriculture in Alaska, Porto Rico, Hawaii, and Guam.

True, Charles Kittridge, an American educator; born in Portland, Me., Aug. 14, 1809. He was pastor of various Methodist churches, and subsequently Professor of Intellectual Philosophy at Wesleyan University. Died in Brooklyn, N. Y., Jan. 20, 1879.

True, Frederick William, an American biologist; born in Middletown, Conn., July 8, 1858; was graduated at the University of the City of New York in 1878; became connected with the government service in 1878; and was appointed expert special agent on fisheries for the 10th census, 1879. He next served as custodian of the collections of the United States Fish Commission at the Berlin Fisheries Exhibition in 1880. He was curator of the department of mammalia at the United States Museum in 1881–1892, and was executive curator in 1892–1897. In the latter year he was made head curator of the Department of Biology at the U. S. National Museum. He died June 25, 1914.

Truman, Benjamin Cummings, an American author; born in Providence, R. I., Oct. 25, 1835; received a public school education; served on the staff of Andrew Johnson, military governor of Tennessee, in 1862. After the assassination of President Lincoln he was on the staff of President Johnson for 18 months; and served afterward as a special agent of the United States government to China, Japan, Europe, Hawaii, and Alaska.

Trumbull, Gurdon, an American ornithologist; born in Stonington, Conn., May 5, 1841; brother of Henry Clay T.; chief publications, "American Game Birds" and "American Woodcock." He died Dec. 28, 1903.

Trumbull, Henry Clay, an American editor; born in Stonington, Conn., June 8, 1830. He was army chaplain, 1862–1865; afterward secretary of the American Sunday-School Union, 1865–1872; and after 1875 editor of the "Sunday-School Times." He died Dec. 8, 1903.

Trumbull, James Hammond, an American philologist; born in Stonington, Conn., Dec. 20, 1821; brother of Henry Clay. He was secretary of state of Connecticut during the Civil War, 1861–1864, and held many honorable posts connected with historical and educational associations. He was president of the American Philological Association in 1874–1875. He made the Indian languages of North America a special study; became an acknowledged authority on the Algonquin tongues; and published many essays on Indian philology. He was a frequent contributor to proceedings of historical societies. He died in Hartford, Conn., Aug. 5, 1897.

Trumbull, John, an American poet and lawyer; born in Westbury, Conn., April 24, 1750. He won his greatest fame with "McFingal," a satire on the loyalists of the Revolution time, written in Hudibrastic verse. His "Poetical Works" were published at Hartford, Conn., in 1820. He died in Detroit, Mich., May 10, 1831.

Trumbull, John, an American artist; born in Lebanon, Conn., June 6, 1756; grandson of the patriot Jonathan Trumbull; was graduated at Harvard College in 1773; studied painting in Boston; served in the Revolutionary War on the staffs of Generals Washington and Gates; became a pupil of Benjamin West. In 1786 he produced his first historical picture, the "Battle of Bunker Hill." After serving for several years as a secretary to John Jay, the American minister to England, and as a commissioner to execute the seventh article of Jay's treaty, he returned to his profession. In 1817 he was employed by Congress to paint four pictures for the rotunda of the Capitol at Washington. For these works which represented "The Declaration of Independence," the "Surrender of Burgoyne," the "Surrender of Cornwallis," and the "Resignation of Washington at Annapolis," he received $32,000. Subsequently he was for many years engaged in finishing former sketches and painting copies of the National pictures, many of which, together with portraits and several copies of old masters, he gave to Yale College in consideration of an annuity of $1,000. Died in New York city, Nov. 10, 1843.

Trumbull, Jonathan, an American patriot; born in Lebanon, Conn., Oct. 12, 1710; was graduated at Har-

vard in 1727; was successively judge, deputy-governor, and governor (1769–1783) of Connecticut; and took a very prominent part in forwarding the Revolutionary War. Washington placed great reliance on him, and frequently consulted him; to this habit, and his phrase, often repeated when in doubt, "Let us hear what Brother Jonathan says," has been traced the name which stands for a personification of the United States. He died Aug. 17, 1785.

Trumbull, Lyman, an American statesman; born in Colchester, Conn., Oct. 12, 1813; removed to Belleville, Ill., in 1837; became secretary of state of Illinois in 1841; and justice of the Supreme Court of the State in 1848. In 1854 he was elected to Congress as a Democrat, and in 1855 was chosen United States senator. He joined the Republican party on the anti-slavery principle, in 1860, and supported Abraham Lincoln; was re-elected to the Senate; secured the passage of the Fourteenth Amendment; and was one of the Republicans who voted against the impeachment of Andrew Johnson. Later, he became a Democrat. He died in Chicago, Ill., June 25, 1896.

Trumbull, Fort, a Revolutionary fort on the W. side of the Thames river, below New London, Conn., and opposite Fort Griswold. It is still garrisoned.

Trumpet, in music, a metal wind instrument of bright and penetrating tone, formed of a single tube of brass or silver, curved into a convenient shape, with a mouthpiece at one end, the other having a bell.

Trumpeter, one of the most important food fishes of the Southern Hemisphere. It ranges from 30 to 60 pounds in weight, and is considered the best flavored of any of the fishes of New Zealand, Tasmania, and South Australia. Large numbers are smoked and sent into the interior. In ornithology, any species of the genus Psophia. They are South American birds, allied to the crane, inhabiting the forests, frequenting the ground in search of grain for food, and often betraying their presence by their loud call, whence both their popular and scientific names are derived.

Trumpet Flower, a name applied to various large tubular flowers.

Trumpets, Feast of, in Jewish antiquity, a feast on the first day of the seventh month (Tisri), which was to be kept as "a sabbath, a memorial of blowing of trumpets, an holy convocation." No servile work was to be done in it; but an offering of fire was to be presented to Jehovah. It preceded by 10 days the Great Day of Atonement. The first of Tisri was New Year's Day of the civil year. It is still observed as a Jewish festival.

Trumpet Shell, in zoölogy, from the West Indies, Asia, and the South Seas. It is employed by the Australian natives and the South Sea Islanders as a trumpet.

Trumpet Weed, in botany: (1) The popular name for Eupatorium purpureum; found on low grounds in the United States, flowering in August and September.

Trunk Hose, a kind of short, wide, breeches, gathered in above the knees, or immediately under them; worn in England during the reigns of Henry VIII., Elizabeth, and James I.

Trusdell, Charles Gregory, an American philanthropist; born in Montgomery, N. Y., May 1, 1826; received an academic education; studied theology and was ordained in the Methodist Episcopal Church in 1857; was presiding elder of the Iowa City district in 1865; pastor in Chicago till the fire of 1871. He was then made general superintendent of the Chicago Relief and Aid Society. After the relief of the fire sufferers, the society was continued for the benefit of the poor in Chicago, and Mr. Trusdell was made superintendent. Died 1903.

Truss, in architecture, an ornamented corbel, serving to support an entablature or balcony, or to conceal the ends of the beams which really support the structure; in the latter case it is frequently made of galvanized sheet iron. In carpentry, a frame to which rigidity is given by staying and bracing, so that its figure shall be incapable of alteration by the turning of the bars about their joints.

Truss Beam, an iron frame serving as a beam, girder, or summer. A wooden beam or frame with a tie rod to strengthen it against deflection.

Truss Bridge, a bridge which depends for its stability on the application of the principle of the truss.

Trust, an arrangement by which property is handed to or vested in a person, in the trust or confidence that he will use and dispose of it for the benefit of another.

The term "trust" has been of late applied, especially in the United States to an arrangement for the control of several companies under one direction, to cheapen expenses, regulate production, and lessen competition.

Trustee, one who holds lands, tenements, or other property, on the trust and confidence that he will apply the same for the benefit of those who are entitled. In law, a person in whose hands the effects of another are attached in a trustee process.

Truxtun, Thomas, an American naval officer; born in Long Island, N. Y., Feb. 17, 1755; joined the navy in 1767. When the Revolutionary War began he was in command of the "Andrew Caldwell," a merchant vessel in which he carried a cargo of powder to Philadelphia. During the same year his vessel was captured by the frigate "Argo." He was then made a lieutenant in the navy and assigned to the "Congress," the first American private equipped ship. In all of his engagements with the enemy he was uniformly victorious. In 1798, when the United States navy was organized, he was selected as one of its six captains, and was placed in command of the "Constellation," and was ordered to protect American commerce in the West Indies. In February, 1799, he fought a severe battle with the powerful French ship "L'Insurgente" and captured her after killing 29 of her crew and wounding 44. In January, 1800, he defeated the French frigate "La Vengeance." In 1802 he was assigned to command a fleet to participate in the war with Tripoli, and went to Norfolk to join the "Chesapeake." About the same time he requested the appointment of a captain for his flagship. His letter was taken to mean his resignation, which was accepted against his wishes. He died in Philadelphia, Pa., May 5, 1822.

Trygon, in ichthyology, the sting ray. Some 25 species are known, chiefly from the tropical parts of the Indian and Atlantic Oceans, though some are from the fresh waters of E. tropical America.

Tryon, Sir George, a British naval officer; born in 1832; entered the navy in 1848; was at Sabastopol; became captain in 1866, and admiral in 1884. He was commander-in-chief on the Australian station in 1884–1888, and in the Mediterranean from 1891 till the disastrous collision (June 29, 1893) off the coast of Syria, when his flagship, the "Victoria," by his mistaken order, collided, capsized, and sank with her commander and great part of her crew.

Tryon, George Washington, an American conchologist; born in Philadelphia, Pa., May 20, 1838; was educated at the Friends' School of Philadelphia. In 1865 he originated the movement for the construction of the present edifice of the Philadelphia Academy of Natural Sciences; became curator of the Academy in 1869 and had charge of the arrangements of the library and the many collections of the museum in the new building. In 1865–1871 he was the editor of the "American Journal of Conchology." Died in Philadelphia, Pa., Feb. 5, 1888.

Tryon, William, a British colonial governor; born in Ireland, about 1725; joined the British navy and as an officer did creditable service. He was made lieutenant-governor of North Carolina in June, 1764, and became governor in July, 1765. In 1771 he was made governor of New York. The patriots detested him on account of his arbitrary rule and especially for the cruelty he manifested in the destruction of Fairfield, Danbury, and Norfolk, Conn., expeditions against which he personally conducted. He relinquished the office of governor in 1778, and returned to England. He was promoted Major-General, and Lieutenant-General. He died in London, England, Feb. 27, 1788.

Tschudi, Egidius, or, as he wrote himself, **Gilg Schudi,** the father of Swiss history; born in Glarus in 1505; studied in Basel and Paris; was in 1533 and 1549 high bailiff at Baden, and for some time a captain in the French service; afterward traveling much among the Swiss mountains in

search of materials for his historical studies. In 1558 he became "Landammann" of Glarus; in 1559 was envoy to the Kaiser Ferdinand I. The chief of his numerous historical works is the "Chronicon Helveticum," embracing the period 1000–1414. Many unpublished MSS. of Tschudi are preserved in the libraries of St. Gallen and Zurich. He died Feb. 28, 1572.

Tsetse. See SLEEPING SICKNESS.

Tsing-tao, an important seaport on the coast of Shen-tung, China, in the former German territory of Kiao-chau, on the N. E. side of the entrance to the Bay of Kiao-chau; was the seat of the German governor of the territory; has an extensive trade. In the World War the Japanese forced the surrender of the forts defending the port on Nov. 6, 1914. Pop. (native) Est. 200,000.

T-square, a draughtsman's ruler; so named from its resemblance to the letter T. The blade is set at right angles to the helve.

Tuaregs, Tuaricks, or **Tawarek,** a nomadic race of Berber origin inhabiting the Sahara between lon. 5° W. and 13° E., and across its entire breadth. They are the finest of the Sahara races, being handsome and powerfully made, but are fierce and are perpetually at war among themselves. They profess Islamism, but are more influenced by pagan superstitions. Their women go unveiled, and take part in public affairs.



TUATERA, OR NEW ZEALAND LIZARD.

Tuatera, a large lizard from New Zealand; apparently carnivorous, and in captivity are fed on raw meat, living frogs, small lizards, earthworms, mealworms, snails, young birds, or mice.

Tuba, a wind instrument, the lowest as to pitch in the orchestra.

Tube. See TUNNEL.

Tuber, in botany, an underground fleshy stem or appendage to the root, being usually an oblong or roundish body.

Tubercle, a small tuber; a warty excrescence; in pathology, a growth usually taking the shape of minute round masses, and developing in the lungs, intestines, larynx, etc., of persons of scrofulous constitution.

Tuberculosis, a general disease due to the formation of tubercles (see TUBERCLE) in various organs of the body. The prevalence of tuberculosis in cattle, and the possibility of tuberculous cattle communicating the disease to human beings through the medium of the meat of slaughtered animals sold for food, have occasioned much discussion among scientists. Tuberculosis is in some instances a hereditary disease, the germs of which are born with the individual, and ready to be developed on the least exciting cause. But it is very doubtful whether it is generally so.



DOUBLE TUBEROSE.

Tuberose (Polianthus), a genus of plants of the natural order Liliaceæ. The plant is in high esteem for the beauty and fragrance of its flowers, the odor of which is most powerful after sunset. The fading flowers emit, in certain states of the atmosphere, an electric light and sparks. The native country of the tuberose is Mexico. They are very extensively grown by American and British florists, who, by planting the roots successionally, manage to keep up a supply of flowers at all seasons. There are several varieties.

Tübingen, a town of Württemberg, Germany, on a ridge between the Neckar and the Ammer; 20 miles S. W. of Stuttgart; is especially noted for its university, founded by Eberhard im Bart in 1477, which became celebrated after the Thirty Years' War as the headquarters of the historico-philosophical theology known as the "Tübingen School" (see below). The town hall dates from 1435, and the castle of Hohentübingen from 1535. The town has important manufactures. Pop. (1921) 20,416.

Tübingen School, in Church history, the name given to two schools of theology whose chief representatives were connected with the University of Tübingen, either as professors or students.

The Old School.— This was essentially orthodox. Its founder was Gottlob Christian Storr (1746–1805), appointed Professor of Philosophy at Tübingen in 1775 and Professor of Theology two years later. He accepted unreservedly the divine authority of the Scriptures, and sought by grammatical and historical exegesis to build up a system of theology.

The Modern School.— The principles of this school, founded by Ferdinand Christian Baur (1792–1860), Professor of Theology at Tübingen, were opposed to those of Storr.

Tubipora, the organ-pipe coral. There are several species from the Red Sea and the Pacific.

Tubular Bridge, a bridge formed by a great tube or hollow beam, through the center of which a roadway or railroad passes. Notwithstanding the success of these structures, the tubular form has been to a great extent superseded by the lattice bridge, patented in 1835, and since that time much used for spanning rivers of great breadth.

Tub Wheel, a form of waterwheel which has a vertical axis and radial spiral floats, which are placed between two conical cases attached to the axis. The water is precipitated from a chute upon the wheel, and follows the spiral canals of the wheel till it is discharged at the bottom.

Tuckahoe, or **Tuckahoo,** an Indian name given to a vegetable substance of doubtful affinity, dug up in various parts of the United States, sometimes of the size or shape of a loaf of bread and hence called "Indian loaf." It consists almost entirely of pectic acid, the chemical substance which, occurring in currants and other fruits, renders it possible to coagulate them into jelly. Tuckahoe is eaten by the North American Indians, who find it a nutritious food. Also, a derisive name applied by Western Virginians to the natives of tide water sections of that State.

Tucker, Abraham, an English philosophical writer; born in London, Sept. 2, 1705. He died in Beckworth, Nov. 20, 1774.

Tucker, George, an American educator; born in Bermuda in 1775; was graduated at William and Mary College in 1797; studied law and practised in Lynchburg. He was a member of Congress in 1819–1825. For 20 years he was Professor of Moral Philosophy in the University of Virginia (1825–1845). He wrote for many journals and periodicals. He died in Sherwood, Albemarle co., Va., April 10, 1861.

Tucker, Gilbert Milligan, an American author; born in Albany, N. Y., Aug. 26, 1847; was graduated at Williams College in 1867 and engaged in journalism; was editor-in-chief of "The Country Gentleman" in 1897-1911.

Tucker, John Randolph, an American naval officer; born in Alexandria, Va., Jan. 31, 1812; joined the navy in 1826 and was promoted lieutenant in 1837. During the Mexican War he was executive officer of the bomb brig "Stromboli," and took part in the capture of Tabasco and other operations. He was promoted commander in 1855. He resigned from the United States navy in April, 1861, and became a commander in the navy of Virginia. He participated in the repulse of the National fleet at Drury's Bluff, and was soon after promoted captain and sent to Charleston, S. C., to command the naval forces as flag-officer. In February, 1865, after the surrender of Charleston, he organized the naval brigade at Drury's Bluff and commanded it till the Confederate army retreated from Richmond. In 1866 he took command of

the Peruvian navy with the rank of rear-admiral. During the war between Peru, Chile, and Spain, he had command of the combined squadrons of the two republics. He afterward settled in Petersburg, Va., where he died June 12, 1883.

Tucker, William Jewett, an American educator; born in Griswold, Conn., July 13, 1839; was graduated at Dartmouth College in 1861, and at Andover Theological Seminary in 1866; was ordained in the Congregational Church and held several pastorates; was Professor of Sacred Rhetoric in Andover Theological Seminary in 1879–93; president of Dartmouth College in 1893–1909.

Tuckerman, Bayard, an American author; born in New York city, July 2, 1855; was graduated at Harvard College in 1878; lecturer on English Literature, Princeton, 1898-1907; publications, mainly historical.

Tuckerman, Edward, an American botanist; born in Boston, Mass., Dec. 7, 1817; was graduated at Union College in 1837 and at the Harvard Law School in 1839; studied for several years in Europe; returning to the United States in 1842 he accompanied Asa Gray to the White Mountains on a botanical expedition; was instructor in history at Amherst College in 1854–1873 and Professor of Botany there in 1858–1886. He was the foremost authority on lichenology in the United States. At different times he examined and classified specimens found by United States surveying parties. Tuckerman's ravine, on Mount Washington, was named after him. He died in Amherst, Mass., March 15, 1886.

Tuckerman, Henry Theodore, an American author; born in Boston, Mass., April 20, 1813. His works include: "The Italian Sketch Book"; "The Collector: Essays," etc. He edited with William Smith "A Smaller History of English and American Literature." He died in New York city, Dec. 17, 1871.

Tudor, the name of one of the royal families of England allied to the race of Plantagenets. The line embraced five sovereigns, and commenced in 1485 with Henry Tudor, Earl of Richmond, the grandson of Sir Owen Tudor, a Welsh knight of distinction, by his wife, the widow of Henry V., and who, after the battle of Bosworth Field, was proclaimed king by the title of Henry VII.; from him the crown descended to his son Henry VIII., whose son Edward VI. succeeded, and after him his two sisters, Mary and Elizabeth; the Tudor dynasty expiring with the death of the latter in 1603, when the house of Stuart succeeded.

Tudor Style, in architecture, a term applied to the Perpendicular style, from the fact that it attained its greatest development under Henry VII., the first of the Tudor line. The chapel which that monarch erected at Westminster is a famous specimen of this style. The term is applied specifically to late Perpendicular work.

Tuesday, the third day of the week, so called from the Anglo-Saxon god of war, Tiu, or Tiw. The Scandinavian form of the name is Tyr.

Tufa, a name given to a light, porous, calcareous stone, sometimes having the aspect of a sandstone, at others earthy and inclosing the decomposed remains of vegetable substances; composition, a carbonate of lime; deposited by springs, rivers, and heated waters which have traversed calcareous rocks; sometimes confounded with tuff which is the term specifically applied to a fragmentary deposit of a volcanic nature composed of heterogeneous materials.

Tufts College, a coeducational institution in Tufts College Station, Mass.; founded in 1855 under the auspices of the Universalist Church.

Tugboat, a small boat used for towing large vessels in and out of harbors, etc. They are also of great service in forcing a channel through the ice; in rescue work if there is a wreck or a ship on fire; in transporting car floats for the railroad companies and in towing great rafts of logs.

Tugendbund ("league of virtue"), a Prussian patriotic union founded at Konigsberg in 1808, ostensibly for the promotion of educational, social, and other reforms, but actually cherishing schemes for throwing off the French yoke. Regarded with some suspicion by the Prussian authorities, the association was dissolved in 1809.

Tug-of-war, a game in which a number of persons divide into two parties, each under the command of a leader. A line is marked out on the ground, and the two parties, laying hold of either end of a stout rope, try to drag each other across the line.

Tuileries, the residence of the French monarchs; on the right bank of the Seine, in Paris. Catharine de Medici, wife of Henry II., began the building (1564); Henry IV. extended it, and founded the old gallery (1600); and Louis XIV. enlarged it (1654), and completed that gallery. The side toward the Louvre consisted of five pavilions and four ranges of buildings; the other side had only three pavilions. During the revolution of 1830 the palace was sacked. It was restored by Louis Philippe to its former splendor, but in 1848 it was again pillaged. The Tuileries then became a hospital for wounded soldiers, a picture gallery, and the home of Louis Napoleon in 1851. On May 23, 1871, it was almost totally destroyed by fire (the work of the communists), and the remaining portions were removed in the year 1883.

Tula, an ancient and important manufacturing town of Central Russia, capital of a province of the same name on the Upa, an affluent of the Oka, 110 miles S. of Moscow. Its churches, its arsenal, museum, and government offices, and the ancient Kreml are the principal buildings. The principal industries are in iron and steel goods, especially the firearms of the great imperial gun factory or private workshops. The Russian army is largely supplied with muskets and small arms from works here. Pop. (1926) 150,132.

Tulane, Paul, an American philanthropist; born near Princeton, N. J., in May, 1801, son of a French emigrant. He received a common school education, and in 1818 he went to New Orleans, opened a store for general merchandise. This business he continued to carry on for nearly 40 years, engaging at the same time in cotton and real estate speculations, and in 1857 he retired with a large fortune. About this time he bought the Stockton place at Princeton, where he subsequently resided. For many years he gave liberally to the charitable institutions of Princeton and New Orleans. In 1822 he gave to the city of New Orleans real estate, which with subsequent gifts aggregated $1,100,000, intending to add about $1,000,000 to the amount, but dying intestate, it fell to his heirs. This gift was used to found Tulane University. He died near Princeton, N. J., March 27, 1887.

Tulane University, an American educational institution in New Orleans, La., formerly known as the University of Louisiana, but reorganized on its present plan in 1884. Up to the time of his death, Paul Tulane, its founder had given it $1,100,000. It has a law department, medical department, College of Technology, College of Arts and Sciences, a department of philosophy and sciences, and the H. Newcomb Memorial College for Women, to which Mrs. Josephine Louise Newcomb gave $500,000. It also has as its school for medical students the Charity Hospital, containing 700 beds and accommodating 6,000 patients per annum. The various departments of the university are located in different parts of the city in modern buildings, with the most complete scientific, mechanical, and literary equipment.

Tule, the name given by the Mexican Spaniards in California to Scirpus lacustris, the club rush or bulrush, which grows abundantly in certain places in the country; two lakes in Upper California being called, in consequence, the Tule Lakes. It has been employed as a material for making paper, baskets, chair seats, etc. The root is astringent and diuretic.

Tulip, a genus of bulbous plants, with usually solitary flowers. The genus is restricted to the Old World, extending from Western Europe to Japan and the Himalayas; there are about 45 species. The common garden tulip has been cultivated away from its native country of Southern Russia and Armenia for upwards of three centuries. The first description given of it is by Conrad Gesner, in a memoir published in 1561. He had seen it in bloom in April, 1559, at Augsburg, in the garden of Herwart, who had received the seeds from Byzantium. It spread rapidly and appeared in most of the botanical books of the second half of the 16th cen-

tury. Into the Netherlands it was introduced in 1571, into England in 1577, and into France in 1610.

The taste for the tulip has since increased and their bulbs have become an article of commerce; it was carried to a ridiculous extent, and the tulip mania reached its height in Holland from 1634 to 1637. To develop all the beauty of form and color of which the tulip is susceptible requires the greatest care in its cultivation. From seed new varieties are raised, the seedlings blossoming at four to seven years. Hundreds of varieties have been established from time to time, which range under four groups — bizarres, bybloemens, roses, and selfs.

Tulip Tree, one of the most magnificent forest trees of temperate North America; attaining in favorable situations a height of 100–140 feet, with a straight, clear trunk. It is the only species of the genus — which belongs to the Magnolia family — and may be recognized by its large three-lobed leaves, with the middle lobe cut square at the end, and large solitary tulip-like flowers having greenish sepals, and petals variegated with yellow and orange.

Tulsa, city and capital of Tulsa county, Okl.; in what was formerly the Creek Nation, and on several railroads; 51 miles N. W. of Muskogee; is the center of the great mid-continent natural gas and petroleum fields, and in a section abounding in bituminous coal, limestone, shale, and hardwood forests; is chiefly engaged in developing these resources; and is the seat of Henry Kendall College (Presb.). Pop. (1930) 141,258.

Tumor, in surgery any morbid parasitic growth, generally, though not always, attended by swelling. Tumors are primarily divided into two classes, the first innocent, including non-malignant, solid, benign, or sarcomatous, and the second malignant growths.

Tumulus, a mound raised over a tomb, or, more rarely, as a memorial of some person or event. Tumuli are found in large numbers in all parts of the world. Many date from prehistoric times, and they are mentioned in the earliest writings of the human race. In the Bible three instances of this mode of burial occur (Josh. vii: 26, viii: 29; II Sam. xviii: 17); according to Homer, a tumulus was raised over Patroclus, and Dercennus, King of Latium, was said by Virgil to be interred in a similar manner. This method of interment continued down to historical periods, and is still practised among the savage races. Not improbably some traces of it linger in civilized communities in the practice of throwing earth on the coffin at a funeral. In size tumuli vary greatly, the larger probably marking the graves of chiefs or persons of distinction. At Upsala, in Sweden, there are three large and high tumuli close together, popularly supposed to be the burial places of Odin, Thor, and Freya. Most of the tumuli in Scandinavia, where they are extremely numerous, consist of large mounds, in which there is a passage leading into a central chamber, round the sides of which are placed the bodies of the dead. These tumuli closely resemble the dwelling houses of Arctic people, such as the Esquimaux. The determination of the age of tumuli is a very difficult problem. As a general rule, where the bodies have been buried in a sitting or contracted position, the tumulus belongs to the Neolithic Age; where the body has been cremated, to the Bronze Age; and where the body is in an extended position, to the Iron Age.

In the United States from the Rocky Mountains eastward to the Alleghenies, and from the S. shore of Lake Erie to the Gulf of Mexico, there are prehistoric tumuli, constructed by an extinct race of people. In the N. part of the district indicated, the mounds are few and small. In the S. part they are more numerous and of greater size and altitude. They are evidently of a common origin. The tumuli of Mexico and Peru are still greater in dimensions. In most that have been examined there have been found the bones of the dead and articles of use and ornamentation.

Tumut, selected in October, 1903, by the lower branch of the Australian Parliament as the Federal capital of the Australian commonwealth. It is a small town of about 2,000 inhabitants, situated in a rich agricultural district of New South Wales, on the river

Tumut, in Wynyard county, and is about one hundred miles W. S. W. from Goulburn, which is one of the more important country towns of that region.

Tundra, a term applied to the immense stretches of flat, boggy, country, extending through the N. part of Siberia and part of Russia, where vegetation takes an arctic character, consisting in large measure of mosses and lichens. They are frozen the greater part of the year.

Tunic, in classical antiquities, a very ancient form of garment in constant use among the Greeks and ultimately adopted by the Romans. The Roman tunic was a sort of shirt worn under the toga, and buckled round the waist by a girdle. It reached an inch or two below the knees, and the sleeves were so short that they merely covered the shoulders; for though tunics hanging down to the ankles, and with sleeves extending to the wrists and terminating in fringes were not unknown toward the close of the republic, they were always regarded as indications of effeminate foppery.

Tuning, the correct adjustment of the sounds of a musical instrument. Such instruments as the flute and horn are tuned without any difficulty, as, if the pitch is altered by accident, it affects every note, and may easily be rectified by varying the length of the pipe. The notes of the organ and pianoforte, however, are unconnected and independent, and require careful adjustment from time to time. Stringed instruments, such as the violin and harp, require tuning on every occasion on which they are used.

Tuning Fork, an instrument of steel, consisting of two prongs branching from a short handle, which, when set in vibration, gives a musical note. It was invented in 1811. Though the pitch of forks varies slightly with changes of temperature, or by rust, etc., they are the most accurate means of determining pitch.

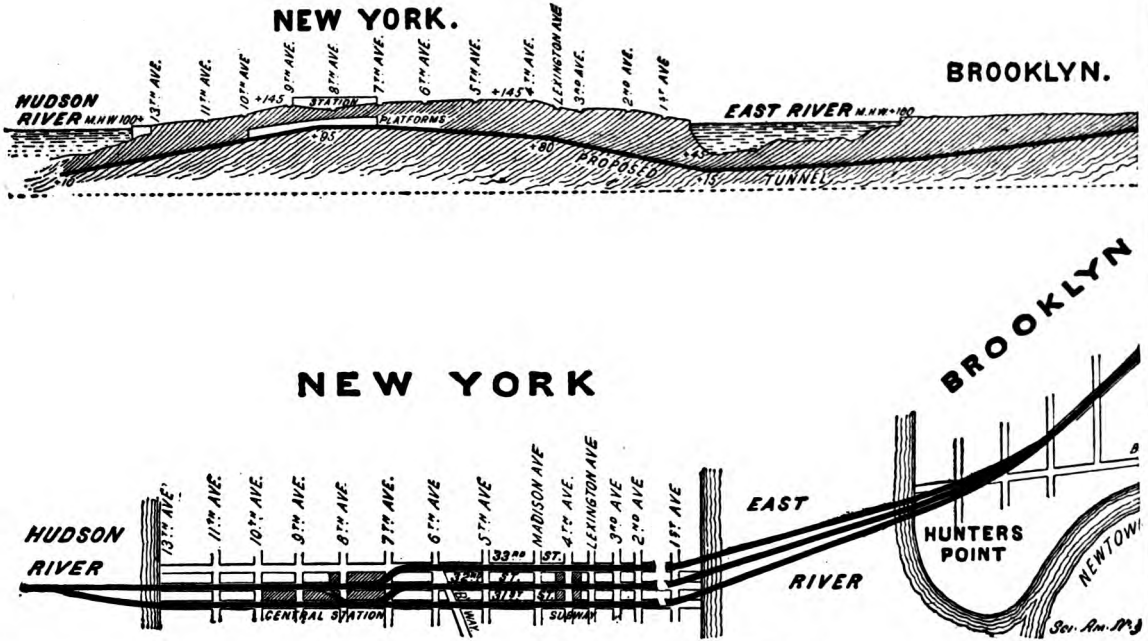
Tuning Hammer, or **Tuning Key,** an instrument consisting of a shank of metal with a cross-handle of wood or metal. The end of it is hollowed so as to fit on the ends of the tuning pins of pianofortes, harps, etc., and by it these instruments are tuned by increasing or decreasing the tension of the strings.

Tuning Pin, a movable pin, around the upper end of which the string of a pianoforte, harp, etc., is twisted, the other end of the string passing around a fixed pin. The instrument is tuned by turning the tuning pins with a tuning hammer.

Tunis, a country of North Africa, now a French protectorate; bounded on the N. and N. E. by the Mediterranean, on the S. E. by Tripoli, and on the W. and S. W. by Algeria; area, estimated at 50,000 square miles; pop. (1926) 2,159,708. The coast line presents three indentations, forming the Bay of Tunis on the N., and those of Hammamet and Cabes or the Lesser Syrtis on the E. The N. W. portion of the country is traversed by the Atlas Mountains, which on their lower slopes have many fertile tracts, partly under culture. Between these mountains and the Gulf of Hammamet on the E. stretches the extensive plain or plateau of Kairwan. The only river of any consequence is the Mejerdah. The inhabitants consist of a mixture of Moors and Arabs, along with Berbers, here called Kroumirs, occupying the elevated tract N. of the valley of Mejerdah.

In ancient times Tunis belonged to the Carthaginians, afterward formed part of the Roman province of Africa, was subdued about 675 by the Arabs, became a powerful state under independent rulers in the 13th century, and in 1575 was incorporated with the Ottoman empire. In the spring of 1881 the French invaded Tunis, in order to punish the turbulence of the Kroumirs, and the French minister resident is now the virtual ruler of the country. Under French administration the Tunisian debt has been consolidated, commerce has increased, the means of transit have been improved, and a number of primary schools established. The resident army of occupation numbers 12,000 men.

Tunis, a city and capital of the protectorate of the same name; situated at the head of a salt lake, nowhere more than 6 feet deep, which communicates by a narrow channel with the Gulf of Tunis, an inlet 30 miles long. At the outlet of the lake is Goletta, the port of Tunis, whose har-



PENNSYLVANIA AND LONG ISLAND R. R. TUNNELS.

Tunnel

bor is a roadstead with good anchorage, and is sheltered from the N. Goletta is connected by railway with Tunis. In January and February of 1912, during the Italo-Turkish War, Tunis was shelled by Italian warships, while fierce fighting took place ashore. The city has 14 schools and colleges, French and Jewish, and in the Great Mosque is also a Mohammedan college. A canal opened in 1893 renders Tunis directly accessible to ocean-going vessels. Pop. (1926) 185,996, mostly Moslems.

Tunnel, in engineering, a horizontal or slightly inclined gallery beneath the surface of the ground; generally used for an aqueduct or for the passage of a railway, roadway, or canal. In the construction of railroads it is frequently necessary to pierce the hills, so as to preserve a line or road as nearly level as practicable. In mining, a level passage driven across the measures or at right angles to the veins which it is its object to reach. Thus distinguished from the drift or gangway which is led along the vein when reached by the tunnel.

A notable engineering feat was accomplished in 1893 in the completion of the boring of the Busk-Ivanhoe railway tunnel under the continental divide of the Rocky Mountains at Hagerman Pass., Col. The tunnel is almost two miles long and is through solid gray granite. It took three years and 20 days, of 20 hours' work each day, to make the excavation. It is 10,800 feet above sea-level, through the top ridge of the continent. Its construction cost $1,000,000 and 20 human lives. The tunnel substitutes two miles of track for ten. Among important modern tunnels are the New York city tunnels under the Hudson and East Rivers, the Boston City, Hoosac, St. Clair River, etc., tunnels in the U. S., and the Alpine tunnels, Cenis, Arlberg, Gothard, and Simplon.

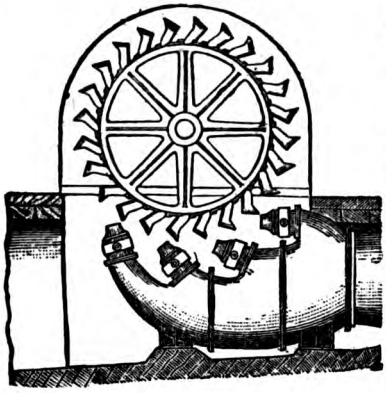
Tupper, Sir Charles, a Canadian statesman; born in Amherst, Nova Scotia, July 2, 1821; studied medicine in Edinburgh University and practised his profession in his native town. In 1855 he was made a member of the provincial legislature and was prime minister of Nova Scotia in 1864–1867. He warmly advocated the formation of the Dominion of Canada, which took place in 1867, and became a member of Sir John A. Macdonald's cabinet in 1870; became minister of public works in 1878; and in 1879–1884 was minister of railways and canals. While filling the latter office he promoted the construction of the great Canadian Pacific railway. In 1884 he was appointed High Commissioner for Canada in London. He was one of the negotiators of the fisheries treaty with the United States in 1887–1888, and was created a baronet in the latter year. In 1895 he represented Canada at the International Railway Conference. He died in 1915.

Turanian, the title conferred on a vast family of combinatory or agglutinative languages, which is made to comprise every tongue of Asia and Europe that is not either Aryan or Semitic, with the exception of Chinese and its cognate dialects. This family falls into two great divisions, the northern and the southern; the northern being subdivided into five classes, Tungusic, Mongolic, Turkic, Finnic, and Samoyedic; the southern into four, Tamulic or the Dravidian languages of the Dekkan, Bhotiya or the dialects of Bhotan and Tibet, Taic of Siam, and Malaic of the Malay and Polynesian islands.

Turban, a wrapper worn round the head by Orientals. Turbans are an extremely ancient form of head-covering, and consist of long pieces — sometimes several yards — of fine linen, muslin, silk, taffeta, or fine woolen material, which is twisted and coiled round the head in a cushion-like form. They are worn by all classes, both indoors and out of doors. In Turkey, turbans vary in size and material according to the occupation, rank, or country of the wearer. Learned men affect a full white turban; the descendants of Mohammed always wear a dark-green turban, and the Christians of Lebanon wear a gracefully folded white turban. Some of the Eastern peoples adopt striped, colored silks, with fringes, placing several fezzes, one over the other, making a cumbersome, conical mound, and round these they wrap silken scarves. In Turkey the red fez, with a tassel of dark blue silk, has been extensively adopted, especially among the upper classes and on the sea coasts. In

India, the use of the turban is being rapidly discontinued by the higher classes, who have adopted in its place a brimless cap, which is frequently enriched by embroidery of gold, silver, or silken threads on colored velvet.

Turbine, in mechanics, a term formerly confined to horizontal water wheels, the revolution of which is due to the pressure derived from falling water, but now applied generally to any wheel driven by water escaping through small orifices subject to such pressure. The turbine was invented by Fourneyron in 1823, and the first



TURBINE: PELTON WHEEL.

one was made in 1827. Air and steam turbines are also in use, air and steam being used instead of water to drive the impulse wheel.

Turbine Engine, one driven by means of steam turbines, on the "multiple step" system, invented by C. A. Parsons, in 1884.

Turbine Steamers, fitted with turbine engines as a prime mover for navigation instead of the complex type of reciprocating engine, have been adopted since the success of the "Turbina" in 1894, which attained a speed of 34½ knots per hour, was followed by the British torpedo boat destroyer "Viper," which developed 10,000 horse-power and 43 m. per hour. Battleships and ocean liners are now built as turbine steamers.

Turchin, John Basil (Ivan Vasilevitch Turchininoff), a Russo-American military officer; born in the province of Don, Russia, Jan. 30, 1822; was graduated at the Artillery School, St. Petersburg, in 1841; appointed ensign in the artillery service; took part in the Hungarian campaign; and was graduated at the military academy for officers of the general staff and appointed on the staff of the Imperial Guards in 1852. He was a colonel in the Crimean War. In 1856 he removed to the United States, and was engaged in civil engineering till the Civil War broke out, when he was commissioned colonel of the 19th Illinois Volunteers. He was promoted Brigadier-General of Volunteers in 1862; served in the Army of the Cumberland till 1864; and then resigned his commission. He was solicitor of patents in Chicago after the war; resumed his profession of civil engineer in 1870; and established the Polish Colony of Randone, Washington co., Ill., in 1873, where he afterward lived. He died in Anna, Ill., June 19, 1901.

Turenne, Henri de la Tour d'Auvergne, Vicomte de, a French military officer, second son of Henri, Duc de Bouillon, and of Elizabeth, daughter of William I., Prince of Orange; born in Sedan, Sept. 11, 1611. At the age of 13 he went to learn the profession of arms under his uncles, the Princes Maurice and Henry of Nassau. Recalled (1630) to France by Richelieu, he was made colonel of a regiment, and first distinguished himself at the siege of La Motte in Lorraine. In the campaigns of 1637–1638 he captured Landrecies, Soire-le-Chateau, Maubeuge, Brisach, etc. During 1639–1642 he served in Italy. He received the title of Marshal of France.

Toward the close of 1643 he was sent to the Rhine, and entrusted with the command of the French troops. His achievements during the last five campaigns of the Thirty Years' War proved him a leader indomitable in spirit and inexhaustible in resource. May 17, 1648, he utterly defeated Montecuculi and Melander at Sommershausen on the road to Augsberg. This victory, followed by that of Conde over the Spaniards at Lens, brought about the peace of Westphalia

(Oct. 24, 1648), and closed the Thirty Years' War.

His devastation of the Palatinate (1674), though done under express orders, has left a dark stain on his reputation. On July 27, 1675, he was killed by a cannon ball at the battle of Salzbach.

Turgot, Anne Robert Jacques, a French statesman; born in Paris, France, May 10, 1727. He was educated for the Church, but renouncing this purpose he studied law, and in 1671 was appointed intendant at Limoges, which post he occupied for 12 years. Shortly after the accession of Louis XVI. in 1774 Turgot was appointed comptroller-general of France. Such, however, was the opposition of the clergy and nobility to his reforms that he was dismissed from office in 1776, and retired into private life. He died in Paris, March 20, 1781.

Turin, a city of North Italy; capital of a province of the same name; at the confluence of the Dora Riparia with the Po, and between those two rivers. The city is essentially modern. The chief buildings are the cathedral, a renaissance building, completed in the beginning of the 16th century, and remarkable for its marble facade; the royal palace, a plain brick building, which contains the king's private library, with valuable MSS., and the royal armory; the university, the Palazzo dell' Accademia delle Scienze, with a picture gallery and museums of natural history and antiquities; the Palazzo Carignano, used at one time by the Sardinian and Italian Parliaments when they met here (1848–1865), and now given up to a collection of natural history. It was long the capital of Savoy, then of the Sardinian kingdom, and from 1861 to 1865 of United Italy. Pop. (1926) 520,164.

Turin Nut, in geology, a familiar name for a fossil, resembling a walnut in appearance, found in the Newer Tertiary deposits near Turin.

Turkestan ("land of the Turks"), the name of a wide, longitudinal, depressed region in Central Asia, which comprises the basins of the Amu-Darya and the Tarim. It is divided by the Pamir Plateau or "roofs of the world" into two distinct and very dissimilar portions. Eastern Turkestan shades off into the Desert of Gobi, while Western Turkestan, sinking to the level of the Kirghis Steppes, extends to the shores of the Caspian. The latter contains the former Iranian Khanates now belonging to Russia.

Within Western Turkestan are comprised the Russian government-general of Turkestan, the tributary khanates of Bokhara and Khiva, the Turcoman steppes, and the independent hill districts of Karategin on the Upper Oxus. The country is nearly synonymous with the basin of the Amu-Darya, and Russia holds both the right bank of the river in what used to be Khivan territory, and its delta, green with rice fields. The Amu valley and delta are covered with a grey clay, impermeable to water, and therefore invaluable to the inhabitants for the construction of canal banks. The non-irrigated and far greater part of Western Turkestan, with the exception of a few table-lands, is covered with black or yellow sands, and the only land fit for cultivation, in addition to the oases along the river, are the slopes of the hills. Khiva is the principal of the oases, and the Amu-Daria, at its greatest height in July, overflows the desert in the direction of the Caspian for 50 miles. By November, 1874, the Russians had finished works at Khojend which were capable of irrigating 43,200 hectares.

The climate is one of extremes, and the heat of autumn is aggravated by a wind laden with fine dust which is almost suffocating, and darkens the air for a week at a time. The Russian flotilla on the Aral draws supplies from the rich coal deposits on the Syr-Daria, while the Thian-Shan and its spurs are particularly rich in iron, lead, rock salt, and naphtha. Gold is found in the Obi district, and in the Karatan Mountains are extensive coal deposits, besides valuable ores. Wheat and clover are the winter crops; all other cereals, such as maize, millet, barley, rice, and peas, are sown in April and gathered in August. Bokhara cotton is of excellent quality. Tobacco and silk are also largely produced. The chief races are Usbegs, who are purely Turkish; Tajiks, the Iranian and trading people; the predatory Turcomans, Turks with an Iranian infusion; and nomad Kirghis and

Kara-Kalpacks. The Russian government of Turkestan, formed in 1867, comprises the provinces of Ferghana, Samarcand, Syr-Dasia, and Semiryechensk; area, 420,807 square miles; pop. (Est.) 7,000,000.

Eastern Turkestan is called Nan-ly by the Chinese, Altai-shar ("six towns") by adjoining Mohammedans, and Iiti-shar ("seven towns") by its Moslem rulers. It is in the Province of Sin-kiang. Till 1853, Eastern Turkestan was a Chinese Province, and subsequently it was ruled by its despot liberator, Yakoob Beg, till his death in 1877; but the Chinese government recovered its lost territory in 1879. Population about 2,000,000.

Turkey, Republic of, since 1921, formerly a large State, comprising Turkey in Europe and Turkey in Asia, under the immediate rule of a Sultan, with the seat of administration at Constantinople, and dependencies in Africa and the Balkan region of Europe. It extended from Montenegro, Bosnia, Servia, and Eastern Rumelia on the north to the Ægian Sea and Greece on the south, and from the Black Sea to the Adriatic, the Straits of Otranta, and the Ionic Sea. By the Treaty of Lausanne, July 14, 1923, Turkey regained in Europe practically the position she had before the World War. She regained control of Constantinople and, with certain modifications, control also of the Straits. The capital was moved to Angora.

Under the provisions of the Treaty of Berlin, following the Russo-Turkish war of 1876, Turkey lost, in Europe, Bulgaria, Eastern Rumelia, Thessaly, and a strip of Eastern Armenia; Rumania, Servia, and Montenegro were constituted independent kingdoms; and the administration of the provinces of Bosnia and Herzegovina and the sanjak of Novi Bazar was transferred to Austria-Hungary, and that of Cyprus to Great Britain. In 1908 Austria-Hungary annexed Bosnia, Herzegovina, and Novi Bazar, and Bulgaria declared its independence as a kingdom. In 1912, after the Italo-Turkish war, the great region of Tripoli, in Africa, was ceded to Italy; in 1913, after the Balkan war, Crete and the Balkan States were lost.

In Europe, the most important river basin is that which drains into the Archipelago or Ægean Sea, which receives the Vardar, the Struma, the Mista or Karasu, and the Maritza. There are several plains remarkable for their fertility and beauty. The climate is not so mild as its latitude might seem to indicate, the winter being severe; but the summer heat is excessive. For the production of the ordinary cereals no part of the world is more admirably adapted. The principal grains are maize, wheat, and barley, while rice, millet, and buckwheat are produced, as also flax, hemp, sesame, and madder. The cultivation of tobacco and cotton is very general. Among fruits the figs are highly esteemed; the cultivation of the olive is carried on along the coasts of the Archipelago and the Adriatic; wine is an important product in many districts; and much attention is paid in some parts to the growing of roses. There are few manufactures except in Constantinople, Adrianople, and Salonica, and these are of little importance.

Turkey in Asia includes Anatolia, otherwise known as Asia Minor, the country intersected by the Euphrates and the Tigris, the mountainous region of Armenia between their upper courses and the Black Sea, the ancient lands of Syria and Palestine, and the coast strips of Arabia along the Red Sea and Persian Gulf. Omitting Arabia, the country consists mainly of: (1) a high plateau traversed by the mountains of Taurus and Anti-Taurus, and stretching from the Archipelago to the borders of Persia. (2) A plateau of less elevation and extent (Syria and Palestine) traversed by the double range of Lebanon. (3) The extensive plain of Mesopotamia on the Lower Tigris and Euphrates. The islands Chios, Lesbos, Rhodes, etc., belong to Turkey in Asia, while the island of Samos is a tributary principality, and Cyprus is held by Great Britain. The chief towns in Asiatic Turkey are Smyrna, Damascus, Bagdad, Aleppo, and Beyrout.

The chief exports are raisins, figs, and dates, silk, cotton, wool, and mohair, opium, coffee, wheat, wine, valonia, olive oil, and tobacco; while the imports are cotton, woolen, and silk goods, metals, iron, steel, glass

wares, etc. The principal railways are those from Constantinople to Adrianople, and from Salonica to Uskup; total length of lines open for traffic in 1900 was 3,000. The length of telegraph lines is about 21,800 miles.

The inhabitants of the Ottoman empire are of very diverse races. First in order are the Osmanli Turks, who, as the dominant race, are diffused over the country. The Greeks form the bulk of the population over great part of the Ægean coasts and islands. Arnauts, or Albanians, are found in the W. throughout Albania; the N. W. is occupied by Servians; and Bulgarians inhabit the district S. of the Danube and E. of Servia and Albania. In Asiatic Turkey the Turks are an important element, but there are also numbers of Armenians, Arabs, Kurds, Jews, Greeks, Circassians, etc.

Turkey, long under a despotic monarch, has now a constitutional government. Its ruler, the sultan, is regarded by the Turks as the caliph or head of Islam. His edicts bear the name of Hattisherif, and his government is often designated as the Sublime Porte. The public officers who conduct the administration under the Sultan are divided into three classes. The first class is that of law and religion, and at their head is the Sheik-ul-Islam, who governs a judicial and ecclesiastical body called the Ulemas. The second class consists of the "officials of the pen," or the members of administration, and at their head is the grand-vizier of Sadrazam. The third class includes the "officials of the sword," at their head being the Seraskier or minister of war, and the Capudan Pasha or minister of marine. The immediate possessions of the Turkish empire are divided into general governments or vilayets, at the head of each of which is a governor bearing the title of vali. The vilayets are themselves subdivided into sanjaks, administered by mutessarifs; and these again into kazas administered by kaimakams.

The established religion of Turkey is Mohammedanism, but Christianity under the Greek form is professed by a large majority of the Greeks and Bulgarians, while part of the Albanians are Roman Catholics. The educational system of Turkey, in accordance with the law of 1869, provides for the erection of elementary schools in every commune, and of secondary schools in the larger towns.

The earliest notice of the Turks or Turcomans, in history is about the year 800, when, issuing from various parts of Turkestan, they obtained possession of a part of Armenia, called from them Turcomania. They afterward extended their conquests over the adjacent parts of Asia, Africa, and Europe, occupying Syria, Egypt, and eventually the territory that remained to the Greek empire. In 1453 Constantinople was taken by Mohammed II., and became the capital of the empire. The Morea and the Islands were afterward overrun, with parts of Hungary, the Crimea, and the shores of the Black Sea. They next took the whole of the country now forming Turkey in Asia, the Hezja in Egypt, and the regencies of Tripoli, Tunis, and Algiers. From the accession of Mohammed IV. in 1648, the Turkish empire began rapidly to decline. The shelter given to Charles XII. of Sweden, in 1711, led to the first war with Russia.

From that time till 1774 the war with Russia was frequently renewed, and, by the peace of the latter year, a large extent of territory and the Black Sea were ceded by the Porte to Russia. In the campaign of 1787 the Turks were still more unfortunate, and, though in 1789, under Selim III., they retook Belgrade, they were elsewhere defeated. In 1807 the Emperor Alexander declared war against the Porte, and in the campaign advanced his frontier to the Pruth by the conquest of Bessarabia; the next severe loss the Turks sustained was from the revolt of the Greeks and the subsequent independence of their country. In 1854 war was once more declared against Turkey by Russia, when England, France, and Sardinia joined the Porte to enable the Sultan to resist the threatened invasion of his dominions. Turkey, for the first time in nearly a century, sheathed the sword without the loss of a foot of territory. Subsequently, Turkey engaged in a war with the Montenegrins, who sought to cast off her yoke; and, later, was concerned in suppressing revolutionary tendencies in the Danubian principalities. In 1875, an insurrec-

tion broke out in Herzegovina, and in October, Turkey declared her partial insolvency.

In February, 1876, the six great European Powers proposed a scheme of reform which was accepted by the Sultan. On May 30 Sultan Abdul-Aziz was deposed. His nephew, Murad V., succeeded him, but was also deposed and followed, Aug. 31, by his brother, Abdul-Hamid II., who, in turn, was deposed and succeeded by his younger brother, Mohammed V., son of Sultan Abdul-Medjid, April 27, 1909. Turkey was badly beaten in a war with Russia in 1877. On April 19, 1897, Turkey was forced by Greece to declare war. The war was short and ended in Turkey's favor on June 3, Greece agreeing to pay a war indemnity of $2,000,000. In 1908 the Sultan Abdul-Hamid II. was forced by a reform organization called the Young Turks to grant a constitutional legislative government. In April, 1909, he plotted to overthrow this, with the result that he was taken prisoner by the revolutionary army, deposed, and imprisoned, his younger brother succeeding him. During these events the Moslems of Eastern Asia Minor rose against the Armenian Christians and massacred great numbers of them. On Sept. 29, 1911, Italy declared war against Turkey, alleging grievances of many years' standing. The war lasted till Oct. 19, 1912, and Turkey practically lost all of Tripoli. While terms of peace were pending, the Balkan States declared war against Turkey, and, under crushing defeats, the latter sought mediation by the Powers, Nov. 3. As a result of this war Turkey lost the greater part of her European Provinces, the area being reduced from 65,350 square miles to 10,882, and the population from 6,130,200 to 1,891,000.

At the beginning of the World War Turkey's Asiatic possessions were Asia Minor, Armenia and Kurdistan, Mesopotamia and Syria, and Yemen and the Hedjaz in Arabia. In that war Turkey allied herself with the Teutonic Powers, and suffered severe losses. See APPENDIX: *World War.*

Turkey, the largest of the game birds, and for that reason domesticated from a great length of time.

Turkey Buzzards, or **Turkey Vultures,** like the other vultures, feed on carrion, but their habits vary somewhat with locality; in the Southern United States they act as scavengers in the towns.

Turkish Bath, a popular form of hot air bath, in which the recipient, after being subjected for some little time to a considerable temperature, is vigorously rubbed down, and is then conducted through a series of cooling chambers till he has regained his normal temperature. All secretions and accretions are thus completely removed from the skin, which is left free to perform its functions healthily.

Turkomans, a nomadic Tartar people occupying a territory stretching between the Caspian Sea and the Sea of Aral, the khanates of Khiva and Bokhara, Afghanistan, and Persia.

Turks, an important and widespread family of the human race; found from the banks of the Lena through Central Asia and Asia Minor to the European shores of the Bosporus and the Ægean. Formerly classed among the Turanian peoples, it is now more usual to say that they are of the Mongolo-Tartar ethnological group, and speak languages of the Ural-Altaic family. To them belong at the present day Yakuts, Siberian Tartars, Kirghizes, Uzbegs, Turkomans, Karakalpaks, Kazan Tartars, and Dungans, as well as the Ottoman Turks.

Turmeric, a handsome herbaceous plant, the flowering stem of which has long, narrow, sheathing leaves, and above these a leafy spike of yellow flowers. It is cultivated all over India, but it is also grown in the East Indian Islands, China, and the Fijis. The tubers, which are yellowish externally, yield a deep yellow powder of a resinous character. Mustard is frequently adulterated with turmeric, and so also are some other substances. Turmeric has an aromatic taste and a peculiar odor not unlike that of ginger. The odor is due to an essential oil called turmerol, of which the tubers contain about 1 per cent.; and the coloring principle is known as curcumin.

Turn Buckle. (1) A form of shutter fastening having a gravitating catch. (2) An analogous device used for securing the free ends of the im-

plement chains in a gun carriage and the cover of the ammunition chest. (3) A link used for setting up and tightening the iron rods employed as stays for the smoke stack of a steamer or for similar objects.

Turnbull, Frances Hubbard Litchfield, an American author; born in New York State. In 1890 she was one of the founders of the Woman's Literary Club of Baltimore, of which she was president for seven years. In the same year with her husband she established at Johns Hopkins University the Percy Turnbull Memorial Lectureship of Poetry in memory of a son. Her publications include "The Catholic Man"; "Sidney Lanier: a Study in Douglas Sladen's Younger American Poets," etc.

Turnbull, Laurence, an American physician; born in Shotts, Scotland, Sept. 10, 1821; was graduated at the Philadelphia College of Pharmacy in 1842 and then became a manufacturer of chemicals. He discovered how to produce citrate of iron and biborate of sodium which would bleach colored ointments and oils. He was graduated at the Jefferson Medical College. When the Civil War began he became a volunteer surgeon on the Potomac flotilla. Later he became a specialist in diseases of the ear and was appointed aural surgeon of the Jefferson College Hospital. Died in 1900.

Turnbull, Robert, an American clergyman; born in Scotland, Sept. 10, 1809; came to the United States in 1833; was editor of the "Christian Review" for two years. He died in Hartford, Conn., where he was for many years a pastor, Nov. 20, 1877.

Turndun, a small, fish-shaped piece of thin, flat wood, tied to a thong, and whirled in the air to produce a loud roaring noise, whence it is sometimes called a bull roarer. This instrument is used by the natives of Australia to call together the men, and to frighten away the women from the religious mysteries. The turndun is employed for similar purposes in New Mexico, South Africa, and New Zealand.

Turner, Charles Willard, an American lawyer; born in Boston, Mass., Feb. 23, 1844; was graduated at Amherst College in 1865; admitted to the bar in 1867; practised in 1867–1892; was Professor of Law and Constitutional History, University of Tennessee, 1892–1915; the Dean of its College of Law.

Turner, Joseph Mallord William, a famous English landscape painter; born in London in 1775; died in 1851. Among his numerous works, many of them now in the National Gallery, London, are the "Garden of the Hesperides," "The Shipwreck," "Sun Rising in Mist," "Crossing the Brook," and "Morning of the Chase."

Turner, Thomas, an American naval officer; born in Washington, D. C., Dec. 23, 1808; joined the navy in April, 1825; was promoted lieutenant in 1835. He served on the frigate "Columbia," the flagship of the East Indian squadron in 1838–1841; was commander of the storeship "Fredonia" of the Gulf squadron in 1847. After the outbreak of the Civil War he commanded the "New Ironsides" in the South Atlantic squadron, and distinguished himself in 1863 in assaults on the forts of Charleston, S. C.; was promoted commodore in 1862, and rear-admiral in 1868, and was retired in April, 1870. He died in Glen Mills, Pa., March 24, 1883.

Turning, the art of shaping wood, metal, ivory, or other hard substances into forms having a curved (generally circular or oval) transverse section; and also of engraving figures composed of curved lines on a smooth surface, by means of a machine called a turning lathe.

Turnip, a native vegetable of Europe and the temperate parts of Asia, growing in borders of fields and waste places. It has been long cultivated and is to be found in every garden of the temperate and cold parts of the world as a culinary esculent; it is also extensively grown in fields for feeding cattle and sheep. It was cultivated in India long before it could have been introduced by Europeans, and is common there in gardens and about villages. The cultivated varieties are very numerous. Though the turnip is of great value for feeding stock, it is not very nutritious, no less than 90 to 96 parts of its weight actually consisting of water.

Turnip Flea, or **Turnip Jack,** owes its popular name to its leaping or skipping powers, is really a very small beetle. It commits great ravages in turnip fields by devouring the seed leaves as soon as they appear above the ground.

Turnip Fly, a popular name for two insects which are quite distinct, and belong to different orders, but are both destructive to turnips. (1) Athalia centifolia, a hymenopterous insect, the larva of which is known by the popular name of "nigger," on account of its black color; (2) Anthomyia radicum, a two-winged fly of the family Muscidæ. The larvæ live on the roots of the turnip, often doing great damage.

Turnpike, a gate that may be set across a road, and watched by a person appointed for the purpose, in order to stop carriages, carts, wagons, etc., and sometimes travelers, till toll is paid, for the cost and repair of the road. Such roads are called turnpike roads, or simply turnpikes, and formerly were common in the American Atlantic States, but tolls on roads have now been almost entirely abolished.

Turnspit, a name given to a variety of terrier dogs, from their being trained to turn the spits or roasting jacks in mansions. The breed is now practically extinct.

Turnstile, a post surmounted with four horizontal arms, which revolve as a person pushes by them. Turnstiles are usually placed on roads, bridges, or the like, either to prevent the passage of beasts, vehicles, or the like, while admitting the passage of persons, or to bar a passage temporarily till toll is paid; they are also frequently placed at the entrance to public buildings, or places of amusement, where entrance money is to be collected, or where it is desired to ascertain the number of persons admitted.

Turnstone, a small genus of birds of the plover family, intermediate between the true plovers and sandpipers. In winter the turnstone is found on the seashore all over the world, being probably the most cosmopolitan of all birds. It derives its name from its habit of turning over stones with its bill in search of its food, which consists of small crustaceans and mollusks. The common turnstone is nine inches in length, and is handsomely marked with black, white, and chestnut; the last-named color is reduced in autumn, when the plumage becomes duller; the legs and feet are orange.



THE TURNSTONE.

Turn Table, in railway engineering, a platform which rotates in a horizontal plane, and is used for shifting rolling-stock from one line of rails to another.

Turpentine Oil, the volatile oil distilled from crude turpentine, and existing in the wood, bark, leaves, and other parts of coniferous trees. These oils, according to the source from which they are obtained, exhibit considerable and marked diversities in their physical as well as in their optical properties. The several varieties when rectified are colorless, mobile liquids, having a peculiar aromatic but disagreeable odor. They are insoluble in water, slightly soluble in aqueous alcohol, miscible in all proportions with absolute alcohol, ether, and carbon disulphide. They dissolve iodine, sulphur, phosphorus, also fixed oils and resins. Turpentine oil is of great importance in the arts, and is specially employed for giving consistency to oil paints and varnishes, conferring on them drying properties.

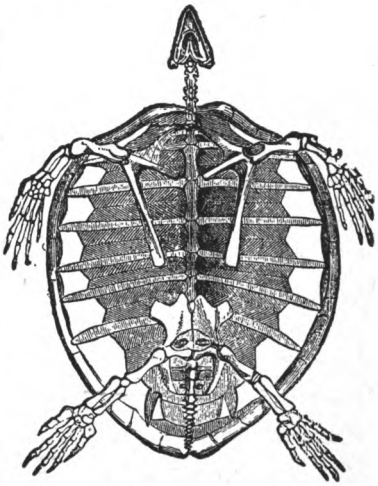
Turret, in architecture, a small tower attached to and forming part of another tower, or placed at the angles of a church or public building, especially in the style of Tudor architecture. Turrets are of two kinds — such as rise immediately from the

ground, as staircase turrets, and such as are formed on the upper part of a building by being carried up higher than the rest, as bartizan turrets. In railways, the elevated central portion of a passenger car, whose top forms an upper story of the roof, and whose sides are glazed for light and pierced for ventilation.

Turret Ship, an ironclad ship of war, whose armament is mounted in one, or more than one, low circular tower or turret placed on the deck, and revolved by steam power. This arrangement affords a wide horizontal fire, and capability of firing the same guns on both sides of the ship—a great advantage over broadside guns, which can only be trained through small arcs. The maximum of offensive power and minimum of armored area are combined in a turret ship. The sides of the ship are made much lower than in broadside iron-clads, and this reduction of surface enables the remaining portions to be very heavily armored, and guns of the weightiest nature to be carried. Captain Ericsson designed in 1855 the "monitor type" of vessel; and about the same time Capt. Cowper Coles of the British navy contrived a turret system differing from Ericsson's in some important particulars. The United States adopted Ericsson's plan, while Cole's system was put in practice in the British navy. The "Monitor," designed by the former inventor, was launched early in 1862. Her deck was only 18 inches above the waterline, and on a metal ring in the center of the deck a turret (20 feet in diameter and 9 feet high) was placed, which had two ports for 11-inch guns, the whole rotating on a central spindle by steam. She proved a most formidable ship, and her name is now applied to all ironclads constructed on the same principle of low freeboard with gun turrets. Her defects were remedied in other monitors subsequently built. The "Miantonomoh" and "Monadnock," of the United States navy, have made successful voyages in the Atlantic and Pacific.

The chief disadvantages of these monitors, arising from the turrets being raised so little above the water, are that the guns cannot be used in heavy weather, for the ports must then be closed to keep out water, and that the revolution of the turrets is in danger of being stopped by a plunging fire from broadside guns directed to the junction of the turrets with the deck.

A system of superposed turrets was introduced in the United States, in the battleships "Kearsarge" and "Kentucky," but after thorough experiments was condemned as unsatisfactory. In England and Europe the turret is used largely in land fortifications; but in the United States it is displaced by the disappearing gun.



SKELETON OF TURTLE.

Turtle, in zoölogy, the popular name for any species of the Cheloniidæ. They may be distinguished by their long, compressed, fin-shaped, non-retractile feet, with the toes inclosed in a common skin, from which only one or two claws project. The carapace is broad and much depressed, so that when these animals are on shore, and are turned over on their backs, they cannot regain the natural position. Turtles are marine animals; their pinnate feet and light shell render them excellent swimmers. They sometimes live at a great distance from land, to which they periodically return to de-

posit their soft-shelled eggs (from 100 to 250 in number) in the sand. They are found in all the inter-tropical seas, and sometimes travel into the temperate zones. The flesh and eggs of all the species are edible, though the Indian turtles are less valuable in this respect than those of the Atlantic. The most highly valued of the family is the green turtle (Chelonia viridis), from which turtle soup is made. It attains a large size, sometimes from six to seven feet long, with a weight of from 700 to 800 pounds. The popular name has no reference to the color of the carapace, which is dark olive, passing into dingy white, but the green fat so highly prized by epicures. The edible turtle of the East Indies (C. virgata) is also highly prized.

Turtle Dove, in ornithology, Turtur communis, widely distributed in the warmer parts of Europe. It is a beautiful bird, of somewhat slender form, a summer visitant to the cooler latitudes, arriving in May and departing in September. They feed on grain and vegetables, often frequenting fields of beans and peas. They make a slight, flat nest of a few twigs, in which two glossy, creamy-white eggs are deposited about the middle of May, and the parent birds take turns at incubation, sometimes rearing two broods in a season. The note is a soft, mournful "coo," often uttered when the bird is on the ground. From its habit of pairing for life, and its fidelity to its mate, the turtle dove has long been a symbol of conjugal affection.

Tuscarora, a tribe of North American Indians, who at an early day lived on the Neuse river in North Carolina. They had much trouble with the colonists and were nearly destroyed as a tribe. The remnant united with the Iroquois and settled in the Oneida territory in New York. They number about 570, and live on the Indian reservation in New York State.

Tuskegee Institute, a coeducational non-sectarian institution in Tuskegee, Ala., for colored students; founded in 1881.

Tussaud, Madame, the foundress of the well-known exhibition of wax-work in London; born (Marie Grosholtz) in Berne, Switzerland, in 1760; learned the art of modelling in wax in Paris. For a time she was engaged in giving lessons in modelling to Elizabeth, sister of Louis XVI., and in this way became acquainted with the leading personages at court. Imprisoned for three months during the Revolution, in 1802 she established herself in London. The collection of over 300 portrait figures (that of Voltaire and others still on view modelled by Madame Tussaud herself from life), with the "Chamber of Horrors," devoted to figures of murderers, instruments of torture, the guillotine of the Revolution, etc., is one of the sights of London. She died in London, April 16, 1850.

Tusser, Thomas, an English musician, teacher, and poet; best known as the author of "Five Hundred Pointes of Good Husbandry"; born in Rivenhall, Essex, England, about 1515. From his rhyming autobiography it would appear that he served as a chorister first at Wallingford Chapel, and afterward at St. Paul's; had the honor of being flogged if not instructed by Nicholas Udall at Eton; was attached for a number of years to the court, probably in the capacity of a musician; and at a later date kept a farm for some time in Suffolk. He died in London about 1580.

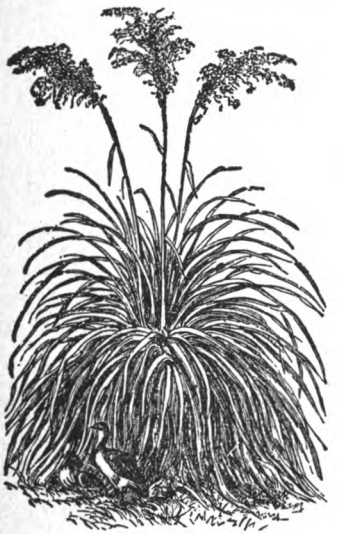
Tussock Grass, a large grass, same genus with the cock's-foot grass of the United States; native of the Falkland Islands, Fuegia, and South Patagonia. It grows in great tufts or tussocks sometimes five or six feet in height, the long tapering leaves hanging over in graceful curves. The plant is a useful food for cattle.

Tutankhamen, a King of Egypt of the 18th Dynasty, who ruled about 1300 B. C. The discovery of his tomb, almost intact, by Herbert Carter, in November, 1922, was hailed as one of the greatest achievements in the field of archaeology. The tomb was only unearthed after a search extending over twenty years, in the burial quarter, opposite the temple of Luxor, of the Kings of ancient Egypt.

Tutor, in many universities, the name given to scholars attached to the various colleges, by whom, assisted by private tutors, the education of the students is chiefly conducted. They are selected from the college. Also in

Scotch law, the guardian of a boy or girl in pupilarity.

Tuttle, Mary McArthur Thompson, an American author; born Nov. 5, 1849; was graduated at Hillsboro College in 1868, and later at the School of Design, McMickin University. In 1874–1875 she studied literature, art, and foreign languages abroad. She became a painter of landscapes and portraits, and in 1895 began lecturing on "Color" before colleges, schools and literary societies.



TUSSOCK GRASS.

Tutuila, an island of the Samoan group, belonging to the United States under the treaty of Dec. 2, 1899, between the United States, Great Britain, and Germany. For several years the United States was anxious to acquire possession of the harbor of Pago Pago, on this island, for a naval and coaling station. In 1872 the local authorities ceded the harbor for this purpose, and in 1878 a treaty was signed in Washington by which the United States was given the right to establish at that harbor a station for coaling, naval supplies, freedom of trade, commercial treatment as a favored nation, and extra-territorial consular jurisdiction. This harbor was occupied by the United States in 1898. Since the World War, former German colony of Samoa, ceded as mandate to New Zealand.

Tweed, William Marcy, an American politician; born in New York city, April 3, 1823; began life as a chairmaker; became an alderman; was in Congress in 1853–1855; was chairman of the board of supervisors of New York city in 1856, and school commissioner in 1856–1857. He was twice sent to the State Senate, and in 1870 was appointed commissioner of public works for the city. He had previously been chairman of the general committee of Tammany Hall and grand sachem. As head of the "Tweed Ring," composed of influential and unscrupulous politicians, he succeeded in obtaining control of the funds of the city government and distributed almost unlimited patronage to his friends. He was brought to trial in 1873; convicted on no less than 12 charges of fraud; and was sent to the penitentiary for 12 years. A reversal of his sentence was obtained in 1875, but he was again imprisoned for lack of bail on a series of civil suits. He broke jail and escaped to Spain, but was captured, sent back to New York on a warship, and recommitted to Ludlow street jail, where he died, April 12, 1878.

Tweed, a cloth, so called from the name of the river which falls into the sea at Berwick, where it is largely manufactured.

Twelve Tables, the name given to the earliest code of Roman law, civil, criminal, and religious, made by the decemvirs in 451–449 B. C. These, originally comprised in 10 tables, to which next year two others were added, were supposed to form the basis of all Roman law, and in Cicero's time were still committed to memory by boys at school. The occasion for them arose in the constant complaints made by plebeians of oppression by patricians; and the principal aim of the tables was to define rights, fix penalties, and prevent oppression under legal forms. Many older laws were left intact by them, and reappear in Justinian's code. To the original tables commentaries were from time to time added.

Twilight, in astronomy, the faint diffused light which appears a little before sunrise, and again for some time after sunset, the amount and duration of the light varying materially in different latitudes and at different seasons. Popularly, the term is only applied to the evening twilight, the morning twilight being called dawn. Twilight is produced by the diffused reflection of light from and among the atmosphere after the direct rays of the sun have ceased to reach the earth. When the sun descends below the horizon, its rays pass through the atmospheric strata, and some of them are reflected toward the earth and illuminate its surface. At first the light, falling on the lowest and densest strata, is reflected in great abundance, but as the sun descends to a greater distance below the horizon, the rays fall on higher, and therefore rarer, atmospheric strata. Consequently fewer rays undergo reflection, and as the number of reflected rays diminishes as the sun descends, the strength of the twilight diminishes in the same proportion, till at last the solar rays fall on strata so rare as to be incapable of reflecting light, and the twilight accordingly disappears. In the morning the change from darkness to light takes place in a similar manner, but in inverted order.

Twill, a diagonal appearance given to a fabric by causing the weft threads to pass over one warp-thread, and then under two, and so on; instead of taking the warp threads in regular succession, one down and one up. The next weft thread takes a set oblique to the former, throwing up one of the two deposed by the preceding. The fabrics thus woven are very numerous.

Twin Screw, a propeller of a steam vessel, composed of two separate and parallel screws which revolve in opposite directions, thus giving increased power over a single screw propeller. The twin-screw system is now employed in the principal warships of the world, and triple-screws are used on the commerce destroyers "Columbia" and "Minneapolis," of the United States navy.

Two-toed Ant Eater, one of the two species of the genus Cyclothurus. It is about the size of a common squirrel, arboreal, and lives on insects. From the forests of Costa Rica, Honduras, and Brazil.

Tye, in mining, an inclined trough for separating ore by means of a flowing stream of water. The slimes are allowed to flow in a thin wide stream upon the upper part of the trough, then disturbed by a broom, and collected, according to relative weight and quality, at different parts of the length of the trough. The sorts are known as heads, middles, and tails; the first going to pile, the second is retyed, the third is refuse. Nautically a rope by which a yard is hoisted.

Tyler, Harry Walter, an American educator; born in Ipswich, Mass., April 16, 1863; was graduated at the Massachusetts Institute of Technology in 1884; was assistant instructor and full instructor of mathematics there in 1884–1887. He then studied abroad. Returning to the United States he was made full Professor of Mathematics at the Institute of Technology in 1893.

Tyler, James Gale, an American artist; born in Oswego, N. Y., Feb. 15, 1855; received a public school education; then studied marine painting. His paintings include "Abandoning the Jeannette"; "The Constitution," etc.

Tyler, John, an American statesman, 10th President of the United States; born in Charles City, Va., March 29, 1790. His father was an officer in the army during the Revolution, and a judge of the Federal Court of Admiralty. Tyler was graduated at William and Mary College, in 1807, when but 17, and was admitted to the bar in 1809. At the age of 21 he was elected to the Virginia legislature; and in 1816, at the age of 26, was elected to Congress. In 1825 he was elected governor of Virginia, and in 1827 Senator of the United States. He sustained the States' Rights policy in Congress, voted against the so-called Force Bill empowering President Jackson to enforce the revenue laws in South Carolina, and for the resolutions censuring Jackson for removing the government funds to State banks. When, in 1836, the Virginia legislature instructed him to vote for the expunging of this censure, he resigned his seat in the Senate. In 1839 he

was elected to the Virginia legislature, and in 1840 was elected Vice-President on the Whig ticket with William H. Harrison. On April 4, just one month after entering on the duties of his office, President Harrison died, and Tyler became President by succession. He at once came into conflict with Congress by vetoing financial bills that he believed to be in violation of the Constitution. His Cabinet, except Daniel Webster, resigned, and their places were filled by States' Rights Whigs. The most important acts of his administration were a treaty with China and the annexation of Texas (1845). At the expiration of his term he retired to private life, till 1861, when he was made president of a peace convention. Failing in his efforts to effect a compromise, he joined the Confederacy, and served in the Confederate Congress till his death in Richmond, Va., Jan. 18, 1862.

Tyler, Lyon Gardiner, an American educator; born in Charles City co., Va., in August, 1853; son of John Tyler, President of the United States; was graduated at the University of Virginia in 1875; practiced law in Richmond, Va., in 1882–1888; and in the latter year accepted the presidency of William and Mary College.

Tyler, Moses Coit, an American historian; born in Griswold, Conn., Aug. 2, 1835; was graduated at Yale University in 1857; later studied theology; ordained in the Congregational Church in 1859; pastor of the First Congregational Church, Poughkeepsie, N. Y., in 1860–1862; Professor of English Literature in Michigan University in 1867–1872 and in 1874–1881; literary editor of the "Christian Union" in 1872–1874. He became Professor of American History in Cornell University in 1881; was ordained deacon in the Protestant Episcopal Church in 1881, and priest two years later. He was author of "History of American Literature During the Colonial Period"; "Manual of English Literature," etc. He died in Ithaca, N. Y., Dec. 28, 1900.

Tyler, Robert Ogden, an American military officer; born in Greene co., N. Y., Dec. 22, 1831; was graduated at the United States Military Academy in 1853; served on frontier duty till the beginning of the Civil War and took part in the Spokane expedition in 1858. Just prior to the outbreak of the Civil War he was a member of an expedition to relieve Fort Sumter, the bombardment of which he witnessed. He was made assistant quartermaster with the rank of captain in May, 1861. In August of the same year he reorganized the 4th Connecticut regiment, of which he was commissioned colonel; was promoted Brigadier-General of volunteers in November, 1862; brevetted major, U. S. A.; and was placed in command of the artillery reserve in the Army of the Potomac in November, 1863. He led a brigade at Cold Harbor and there received a wound which maimed him for life and permanently broke his health. At the close of the war he was brevetted Major-General in both the volunteer and regular armies. He died in Boston, Mass., Dec. 1, 1874.

Tyler, Royall, an American author; born in Boston, Mass., July 18, 1757. In 1794 he was judge of the Supreme Court of Vermont, and in 1800 its Chief Justice. He wrote the first American play to be acted by regular comedians: "The Contrast," produced in 1786 at New York. He died in Brattleboro, Vt., Aug. 16, 1826.

Tyler Insurrection, a popular revolt in England during the minority of Richard II., headed by Wat Tyler, a soldier who had served in the French wars, and Jack Straw, an Essex peasant. Its immediate occasion was the imposition in 1381 of a poll tax of three groats on every adult, to defray the cost of the disastrous French war; and the first blow struck was the death of a tax gatherer, who had offered an insult to the daughter of a blacksmith in Essex. From Essex the revolt spread over Norfolk, Suffolk, Sussex, and Surrey, but its strength lay in the 100,000 men of Kent, who marched on London, putting to death every lawyer whom they found. The nobles fled, while the artisans of London flung open the gates of the city. At Mile End, without the city, the young king met the great mass of the peasants, whom he overawed and induced them to disperse by promising them charters of freedom and amnesty. However, 30,000 remained with Wat Tyler to watch over the fulfilment of the royal pledge, and this body Richard met by chance next

morning at Smithfield. In the conference which ensued, William Walworth, the Mayor of London, exasperated at the insolence of Tyler, stabbed him with his dagger, and in the scene of confusion which ensued, the king, with great presence of mind, addressed the populace, led them to Islington, and commanded them to disperse. The death of Tyler paralyzed the people, while it revived the courage of the nobility. The king, in violation of his pledge, stamped out the revolt with ruthless cruelty.

Tympanites, derived from the Latin word "tympanum," for drum; the distention of the abdomen arising from an excessive accumulation of gas in its cavity. The gas collects, as a rule, in the interior of the alimentary canal, especially the intestines, but in exceptional cases it occupies the peritoneal cavity. It is a very painful disorder, and may be relieved by applying hot turpentine stupes to the abdomen, and by giving internally aromatic spirits of ammonia, etc., under competent medical advice.

Tympanum, in anatomy, the drum, middle ear, or middle chamber of the ear; a narrow, irregular cavity in the substance of the temporal bone, placed between the inner end of the external auditory canal and the labyrinth.

Tyndale, Hector, an American military officer; born in Philadelphia, Pa., March 24, 1821. He was not opposed to slavery and knew little of the raid of John Brown, but he was requested to escort Mrs. Brown on her last visit to her husband. While in the discharge of this duty he suffered many insults and threats, and on the morning of the execution an unseen assassin fired a shot at him. Prior to the execution a number of papers in the South had threatened that a "nigger's" remains would be substituted for those of Brown and given to his friends. Therefore, when the authorities offered the coffin to Tyndale he positively declined to accept it till it was opened and the body identified. When Fort Sumter was fired on he immediately returned from Europe, and became major of the 28th Pennsylvania regiment; was promoted lieutenant-colonel in April, 1862. He particularly distinguished himself during the battle of Antietam. Though wounded in the hip early in the day he remained on the field till carried to the rear in the afternoon with a musket ball wound in the head. He was promoted Brigadier-General of volunteers in November, 1862; was brevetted Major-General of volunteers in 1865. He was Republican nominee for mayor of Philadelphia in 1868, and was defeated by only 68 votes. He died in Philadelphia, March 19, 1880.

Tyndale, William, memorable in the history of the English Bible; born in Gloucestershire, England, about 1484; was educated at Oxford, then at Cambridge. He left Cambridge most probably about the close of 1521 to become chaplain and tutor in the household of Sir John Walsh of Little Sodbury in Gloucestershire. In 1523 he went up to London, where he was entertained in the house of Humphry Monmouth. He was already a competent Greek scholar, and in his unsuccessful application to Tunstall, Bishop of London, he carried with him a translation of part of Isocrates as a recommendation. In the spring of 1524 he went to Hamburg, probably made his way thence to Wittenberg, next in the autumn of 1525 to Cologne, and there, with the help of a Franciscan friar named William Roye, and another, began with Quentel in 1525 the printing of his English New Testament in an impression of 3,000 copies in quarto size. This had not proceeded beyond the Gospels of Matthew and Mark when the officious intrigues of Cochlæus forced Tyndale to flee to Worms, where, instead of completing Quentel's unfinished work, Peter Schoeffer printed for him another impression of 3,000 copies in a small octavo size, without prefaces to the books or annotations in the margin. The quarto was completed soon after, most probably also by Schoeffer, with general introduction, prologues, inner marginal references, and outer marginal glosses, these last largely taken from Luther's version of 1522. The translation itself owed much to Luther, much also to the 3d ed. (1522) of the Greek Testament of Erasmus with its Latin translation. Tunstall and Warham denounced the book, hundreds of copies were bought up and burned by their authority, but in both forms it made its way by the summer of 1526 to the hearts of Englishmen, and

the strong simplicity and homely vigor of its style established a standard of Biblical translation into English, and bequeathed its phrases imperishable to all posterity. By 1530 there were six editions, of which three were surreptitiously printed at Antwerp. Meanwhile Tyndale continued to toil indefatigably at the labor of his life. In 1530 he published at Malborow (Marburg) by Hans Luft his version of the "Pentateuch" where the marginal glosses, almost all original, contain many violent attacks on the Pope and the bishops, full of rich satire, irony, and even humor. We find that here, still more than in his New Testament, he leans heavily on Luther. Later, in 1531, appeared his version of "Jonah," with a prologue. An unauthorized revision of Tyndale's New Testament was made at Antwerp by George Joye in August, 1534, and in November of the same year Tyndale himself issued there at the press of Marten Emperor a revised version with short marginal notes and prologues, together with a translation of the "Epistles taken out of the Old Testament which are read in the church after the Use of Salisbury on certain days of the year." One copy of this work, probably that preserved in the British Museum, was struck off on vellum and beautifully illuminated for presentation to Queen Anne Boleyn. Once again before the end Tyndale revised his Testament (1535), this time without the marginal notes, but with the innovation of headings to the Gospels and Acts, but not the Epistles. But now it wanted only the crown of martyrdom to consecrate the lifelong devotion of Tyndale to his task. Already the emissaries of Henry VIII. had often tried to get hold of him, or at least to discover his hiding place. He had spent two quiet years of constant labor at Antwerp, part of the time in the house of Thomas Poyntz, when he was seized through the treachery of one Henry Philips, May 24, 1535. For 16 months he lay in the castle of Vilvorde, and it appears that Cromwell made some ineffectual efforts to save him. Tyndale's protracted trial was apparently not begun till 1536; he was found guilty of heresy, and on Friday, Oct. 6, of that year, he was first strangled, then burned at the stake.

Tyndall, John, an English physicist; born in Leighlin Bridge, near Carlow, Ireland, Aug. 21, 1820. He studied in Germany; in 1850 published in the "Philosophical Magazine" "Discoveries in Magnetism." He was the first to climb the Weisshorn, and subsequently reached the summit of the Matterhorn. In 1872 he lectured in the United States; the profits he devoted as a fund "in aid of students who devote themselves to original research." He died in Haslemere, Surrey, England, Dec. 4, 1893.

Tyner, James Noble, an American lawyer; born in Brookville, Ind., Jan. 17, 1826; received an academic education; was a member of Congress in 1869–1875; 2d and 1st assistant postmaster-general, and Postmaster-General in 1875–1882; represented the United States at the International Postal Congress in Paris in 1878. He was appointed assistant attorney-general of the United States for the Post-office Department in 1889 and 1897. Died at Washington, D. C., Dec., 1904.

Tyng, Stephen Higginson, an American clergyman, long rector of St. George's Church, New York city; born in Newburyport, Mass., March 1, 1800; and was graduated at Harvard University in 1817. For several years he edited the "Episcopal Recorder," the "Protestant Churchman," etc. He died in Irvington, N. Y., Sept. 4, 1885.

Type, a rectangular solid of metal, wood, or other hard material having a raised letter, figure, punctuation mark, or other character on the upper end, which, when inked, is used to make impressions on paper and other smooth surfaces; the term is also used collectively. Types must be all of a uniform height, and perfectly true in their angles, otherwise they could not be locked firmly together to be printed from. Notches are made on one side of the type to assist the compositor in distinguishing the bottom from the top; the groove is a channel made in the bottom of the type to make it stand steadily. From the character of the letters types are known as capitals, small or lower-case letters, italics, script, etc. The different sizes are now, however, named by the "point" system, as 5-point, 5½-point, 6-point, etc. Types are made by casting (which is now done by machin-

ery), the letter being first cut on the end of a steel punch, and the punch then driven into a piece of copper, which forms the matrix or bottom of the mold intended to produce the letter. A fount or font is a complete assortment of any given kind of type, the number of each letter being in proportion to the frequence of its occurrence in printed matter. A complete font of type, including Roman and italic, with capitals, figures, points, and signs, consists of 226 different characters.

Type Metal, the alloy of lead and antimony used in casting a printer's types, the usual proportions being one part of antimony to three of lead; but a superior and harder kind of type is sometimes made by alloying two parts of lead with one of antimony and one of tin. Both these alloys take a sharp impression from the mold or matrix, owing to their expansion on solidification, and they are hard enough to stand the work of the press, without being brittle or liable to fracture.

Type-setting Machines, mechanical devices for setting type. The first record of type-setting machinery was made in the English Patent Office in 1794. In 1882 W. Church, of Connecticut, took out a patent for a machine having a keyboard, the manipulation of which guided freshly-cast type to a central point. Alden's machine was the first to come into practical use. It was used on magazine work and was able to set about 3,000 ems an hour, but required several men to operate it. Following these machines came the Burr, afterward called the Empire, and the Thorne, both of which are still extensively used. The latter combines the distribution and composition in a single mechanism. Its distinctive feature is an upright cylinder containing grooves in its periphery, each groove so formed as to admit only the character bearing corresponding nicks. It is manipulated by a keyboard, the types falling perpendicularly from the place where they are distributed into the line forming from copy. At the side of the machine sits an operator who justifies the matter into lines as fast as may be necessary. A speed of from 4,000 to 5,000 ems an hour is common. The disadvantages attributed to it are breaking type and clogging. The Mergenthaler linotype is incorrectly spoken of as a type-setting machine. It does not set type but matrices, from which a bar called a linotype is cast, this being the equivalent of a line of type. It is worked by a keyboard and has two advantages over other machines; no time is lost upon justification, as the spaces are cast at the same time as the letters, and there is no necessity of distribution. When the matter is done with it is melted and used over again. It is in general use in large newspaper offices. Since the introduction of the linotype several similar machines have appeared.

Typewriter, a machine fitted with types which print by a pressure on the keys with the fingers. The principle, briefly stated, is that of a series



TYPEWRITER.

of rods pivoted to keyed rods, similar to the action of a pianoforte, the ends of the rods carrying the characters of the alphabet and all striking on a common center. There is a self-inking arrangement, and several minor improvements have been added in recent years, bringing the invention to a high state of perfection. It is on record that one Henry Mill obtained a patent in England, Jan. 7, 1714, for such a machine. The record does not describe it, except that it was a device to write in printed characters one letter at a time, one after another. The writing machine called the typewriter was invented at Milwaukee, Wis., in 1867, by C. Latham Sholes, Samuel W. Soule, and Carlos

Glidden. One device after another was conceived and developed till 25 or 30 experimental instruments were made, each one a little better than the one preceding. In this way the invention grew till at the present time the device is thought complete.

The use of the typewriter has completely revolutionized the copyist's trade, and the instrument is one of the most valuable labor-saving devices of the day. Most standard machines now possess the visible writing feature, and have attachments for tabulating figures and the use of more than one colored ribbon; and there are special types of machine for writing in ledgers and other account books, for making neo-style stencils, and for other out-of-ordinary purposes. In 1910 the Census Bureau used a combination of typewriter and adding machine in tabulating the returns from the perforated cards. See CENSUS.

Typhoid Bacilli. The discovery of a method of identifying the bacillus, or living germ, of typhoid fever is due to Dr. Hiss, one of the bacteriologists of the New York Board of Health in 1897. Previously there were only two ways of determining a case of typhoid fever. The first method was by the physical symptoms of the patient, a clinic study of his conditions. This was always unsatisfactory because till the disease is 8 or 10 days old, these symptoms are not to be depended on. Another test, devised by Widal, a scientist of Vienna, and said to be actually discovered by Robert Pfeiffer, of Berlin, Dr. Koch's assistant, is an examination of the blood. A drop of blood or serum is taken from the earlobe or the finger tip, and mixed with pure typhoid culture. A bit of the mixture is then put under a microscopic slide. If there is typhoid in the blood, or if the patient has had typhoid in his system at any time within five years, the bacilli introduced from the typhoid culture, as can be seen plainly through the lens, gather into groups. If there is no typhoid at all, the bacilli move about violently. Yet this test, though good to confirm, is not altogether conclusive and never absolutely proves the actual presence of typhoid. What Dr. Hiss has done has been to devise a culture medium in which typhoid germs will multiply and the colon bacillus will not. Eighteen hours is sufficient time for the bacilli to grow, and a statement of results will reach the doctor inside of 36 hours after he has sent a specimen to a laboratory.

Typhoid Fever, in pathology, a kind of continued fever which is known by many names. It was called "typhoid" and "abdominal typhus" from its supposed resemblance to typhus or jail fever. It is often known as "low fever" and "slow fever," from its duration; and as "autumnal" or "fall" fever, from the time of the year at which it is most prevalent. The term "enteric fever" was applied to it from the fact that the intestines are always attacked in this disorder; but "gastric fever" is a misnomer, for there is never any organic disease of the stomach. Typhoid fever results from the introduction of a specific poison into the system, and is said to be due to the development of a specific bacillus. It is not contagious, and the poison appears to be communicable only from the discharges.

Typhon, in Greek mythology, a famous giant who was reputed to be the son of Tartarus and Terra, and fabled to have 100 heads shaped like those of a serpent, and with devouring flames darting from its many mouths and eyes. Typhon, as soon as born, to avenge the death of his brother giants, made war on heaven, compelling the gods to disguise themselves and fly for safety; Jupiter, however, regaining courage, threw off the resemblance of a ram which he had assumed, and, hurling his thunderbolts at the audacious invader, flung him to earth wounded and writhing, when, to prevent his recovery, he cast Mount Etna at his head, and buried the rest of his body beneath the island. Through this vast mountain, however, the imprisoned giant still belches forth his fire and smoke, and howls his discordant thunder. In the Egyptian mythology Typhon is the name given to the Evil Genius.

Typhoon ("hot wind"), the name given to the violent hurricanes which rage on the coasts of Japan and China and the neighboring archipelago. They occur from May to November, but especially in July, August and September, traveling generally from E. N. E. to W. S. W. along the coast of China.

In their broad characteristics they resemble hurricanes in other parts of the world, and their tremendous fury is no doubt due very much to the surface conditions under which they are produced.

Typhus, in pathology, typhus fever; a contagious fever, which occurs mainly in temperate and cold climates, and often rages as an epidemic. It is also known as "spotted," "epidemic," or "contagious" fever, and was formerly called "camp" or "jail" fever from its prevalence in camps and prisons. It is most prevalent among females and young people, but the highest rate of mortality from the disease occurs among adult males. The contagion is communicated through the air, and probably proceeds from the breath, which has a peculiar foul smell.

Typographical Union, a society of compositors banded together for mutual protection, for the regulation of wages, fixing the number of apprentices allowed to each establishment, the length of time each apprentice must serve in order to become a master workman, and for extending general aid to the members of such association. They do great good.

Typology, a discourse on types, especially those of Scripture; the doctrine of types; a department of theology which investigates Scripture types, and the principles applicable to their interpretation. It starts from the position that the leading truths of revealed religion were the same under the Patriarchal, the Jewish, and the Christian dispensations. These truths were, however, revealed to the earlier worshipers more or less obscurely, being expressed by symbols, instead of stated directly in words. Each type employed had a twofold meaning and purpose — it was a symbol of some religious truth and predictive of the antitype, Christ.

Typothetæ, the name given to a trade guild consisting of persons connected with the printing trades, both workmen and employers. The name as now used in the United States is a revival of an ancient appellation conferred on an association of printers of whom we find record as early as the latter half of the 15th century. The first use of the name in the United States was in 1863, when P. C. Baker, of New York city, proposed the name for a society of employing printers in that city. The name was adopted, but the society did not survive long. In 1883 the New York society was resuscitated, and the name readopted. From that city similar organizations spread all over the country.

Tyr, in Scandinavian mythology, the son of Odin, and the god of war and of fame, which idea is expressed in old Norse by the word tyr. According to the Edda, he was single-handed. When the Æsir-gods persuaded the wolf Fenrir to allow himself to be bound with the bandage Gleipnir, Tyr put his right hand in the wolf's mouth, as a pledge that he would be loosened; and when the gods refused to release him, the wolf bit off Tyr's hand to the wrist, which was called, in consequence, Ulflithr, or the Wolf's Joint. In the twilight battle of the gods, he meets his death at the same time with his enemy, the monster dog Garmr.

Tyrant, originally, one who obtained supreme or absolute power by usurpation, or who derived it from one who had obtained such power by usurpation, and maintained it by force, though he might exercise his power with strict moderation. A monarch, or other ruler or governor, who takes advantage of his power to oppress his subjects or fellow citizens.

Tyrant Birds, a family of passerine birds, chiefly confined to tropical regions. Among the 350 species of which the family consists, there is great diversity of form and even of habit. Noteworthy species are the scissor tail, remarkable for its grace of form and beauty of plumage, and the common American shrike-billed kingbird or bee martin. The latter, like all the tyrant birds, is of a pugnacious temper, and is a determined enemy to sparrow hawks and other small birds of prey; but it is much disliked by farmers on account of its propensity for eating bees.

Tyre, in ancient geography, a famous city of antiquity, on the coast of Phœnicia, 24 miles to the S. of Sidon. The first city of Tyre was built on the mainland, but the second and more important city was erected on an island about a mile long, running parallel with the shore, but sep-

arated from it by a strait of the Mediterranean a mile wide. The city covered the whole island, and was of extraordinary magnificence and beauty, while its wealth made it the envy of all surrounding nations. Tyre had two capacious harbors, and the whole island was surrounded by a strong wall 150 feet in height. The Tyrians were celebrated for their splendid dyes, especially of scarlet and purple, for their skill in all mechanical arts, their metallic work, industry, and commerce. In the time of David and Solomon, the Tyrian king, Hiram, maintained friendly relations with the Israelites, and his people greatly assisted Solomon in the building of his temple. Tyre is repeatedly mentioned in the Old Testament for its strength, wealth, and beauty, and is threatened with destruction for its pride and arrogance. The prosperity of Tyre was not finally destroyed till the conquest of Syria by the Turks in 1516. The modern Tyre or Sur is an insignificant place of 5,000 inhabitants.

Tyrol, a former crown land of Austria, now divided into North Tyrol, a province of Austria, and South Tyrol, now a part of the Kingdom of Italy. North Tyrol area, 4,786 sq. m.; pop. 308,400. South Tyrol has an area of about 5,540 sq. m., and a population estimated at about 700,0000. The province is traversed from E. to W. by the three chains of the Alps; the central chain (11,000 to 12,500 feet), which is crossed by the road over the Brenner Pass (4,588 feet), the principal line of communication between Italy and Germany, separates the German from the Italian side The people are noted for fidelity to the Roman Catholic faith and their devotion to their country, but are somewhat backward in education. The romantic mountain scenery attracts thousands of visitors. Pastoral pursuits furnish the chief occupations, though some grain is grown, and considerable attention is paid to the cultivation of the forests, of fruit, wine and silkworms. The chief town is Innsbruck, with a university (1677 with 700 students); Trent, Roveredo, Brixen, and Bozen are the next towns of consequence. The provincial chamber consists of 68 members, excluding Vorarlberg, which has its own chamber of 26 members. Tyrol, the ancient Rhaetia, was conquered by the Romans under the Emperor Augustus. After the fall of the empire it was occupied by the Boiardi (Bavarians) and Longobardi. During the Middle Ages the most important rulers in Tyrol were the counts of Tyrol and the bishops of Trent and Brixen. In 1363 the counts bequeathed their possessions to the Duke of Austria, and they have formed an appanage of the House of Hapsburg ever since, except during the short period 1806–1814, a period made memorable by the resistance of Andreas Hofer and his associates to French and Bavarians.

Tyrone, Hugh O'Neil, Earl of, an Irish rebel; born in Ireland, about 1550; was the son of an illegitimate son of Conn O'Neil, the 1st Earl of Tyrone, and was himself in 1587 invested with his grandfather's title and estates. But he soon plunged into intrigues both with the Irish rebels and with Spain against the authority of Elizabeth, and in 1597 assumed the ancient title of "The O'Neil," and began the struggle openly. His success soon spread the flame of insurrection over all Ulster, Connaught, and Leinster. The queen sent over Essex with more than 20,000 men, and at Ballyduich Tyrone met him under truce, and submitted his demands to Elizabeth. Lord Mountjoy soon succeeded Essex, and quickly subdued the most of the country. But at length in 1601 a Spanish force of 5,000 men landed at Kinsale, and 2,000 more at Castlehaven. Mountjoy at once besieged Kinsale, while Tyrone advanced to its relief, but was defeated with heavy loss, and severely wounded. Mountjoy pursued him to the N. and ravaged his country. After Kinsale fell Tyrone made his submission at Mellefont and was reinstated in his earldom. But under James I. he intrigued anew with Spain, and finally in 1607 found it necessary to flee. His lands were confiscated and he himself died in Rome in 1616.

U

U, the 21st letter and the 5th vowel of the English alphabet. It is one of the three primitive vowels, from which the various vowel sounds in the Aryan languages have been developed. Its true primary sound was that which it still retains in most of the European languages, viz., that of oo in cool, tool, wood, etc., similar to the French ou, as in cour, tour, etc.

U-Boat, the common name of the German submarine in the World War.

Ud-nun-ki, ancient **Adab,** a city of Babylonia, mentioned in the code of Hammurabi (q. v.), and discovered by the University of Chicago's excavating expedition in 1904. Considered the oldest city in the world; for many years it had been an object of search by Orientalists. Excavations at Bismya disclosed the remains of four temples, built one above the other, the bricks of the lowest level bearing the syllables Ud-nun-ki.

Uhl, Edwin Fuller, an American statesman; born in Rush, N. Y., Aug. 14, 1841; settled in Grand Rapids, Mich., in 1876 and practised law till he became mayor of that city in 1890. He was made assistant Secretary of State in October, 1893; and during the sickness of Secretary Gresham was Acting Secretary of State. While in this office he was entrusted with the arbitration to settle the boundary between Brazil and the Argentine Republic. He was made ambassador to Germany in February, 1896. He died in Grand Rapids, Mich., May 17, 1901.

Uhlan, or **Ulan,** one of a variety of light cavalry of Asiatic origin, introduced first into Poland by Tartar colonists. They are employed in the Russian, Austro-Hungarian, and German armies, especially in the latter. for skirmishing, reconnoitering, and scouring the country in advance of the main body of the armies.

Uitlanders, or **Outlanders,** a name given to the foreign residents of the Transvaal Colony. These comprise people from all countries, the majority, however, being British subjects, and the refusal of the Transvaal government to give them the franchise became the source of much trouble. Under treaty arrangements made in 1884, Great Britain had a measure of control over the foreign affairs of the Transvaal (then the South African Republic), but it was solemnly agreed that in its internal affairs the government of the republic should exercise full and complete independence. The discovery of gold in 1886 drew great numbers of foreigners to the Transvaal, most of them being mining adventurers. These wanted a share in political affairs, but the Dutch Boers who were at the head of the republic refused to listen to their demands. The Uitlanders were allowed, after a residence of two years, to become naturalized, but they had to wait 12 years more before being allowed to vote. After 1896 the tax on mining profits was 5 per cent.; on the yield of mining leases 2½ per cent., and there was also a heavy poll tax. The Uitlanders were denied the right of public assemblage and had to procure a permit from the police to hold a meeting. In 1895 the Jameson raid threatened for a time a disruption of peaceful relations. At Johannesburg, the largest city of the Transvaal, a mass meeting of the Uitlanders was held on Dec. 24, 1898, to agree on a petition to Queen Victoria praying for protection from the Boer police. Their object was frustrated by

the presence of a large number of armed Boers who wrecked the interior of the hall and injured many of the people assembled. Another public meeting called on Jan. 13, following, to protest against these proceedings, was also broken up by the native authorities. These events and the lack of any definite plan for settling the difficulties brought on the Boer-English war, and the extinction of independence in the Dutch South African republics. See TRANSVAAL.

Ukase, an edict or order, legislative or administrative, of the Russian government. It has the force of law till annulled by subsequent decisions or orders. A collection of the ukases issued at various times, made by order of the Emperor Nicholas in 1827, and supplemented since, year by year, constitutes the legal code of the Russian empire. An edict or order, generally, issued by some competent authority.

Ulema, the collective name (which cannot be used as a singular) of the body of professional theologians and doctors of divinity, and therefore of law, in any Mohammedan country. They form the legal and judicial class, and interpret the Koran and the law derived therefrom; they also constitute whatever there is of the nature of a hierarchy in Islam, and their power and influence have often curbed the irresponsible authority of a despot.

Ulfilas, or **Wulfila,** a Gothic bishop and translator of the Bible; born in one of the Gothic settlements to the N. of the Danube in A. D. 311. He was probably of pure, perhaps noble Gothic blood, the story told by Philostorgius, that his progenitors were among the prisoners brought by the Goths from Cappadocia in 258, resting on very insufficient authority. Being sent to Constantinople on an embassy — possibly as a hostage — he adopted the Christianity of the capital, which was then of the Arian type, and was appointed "Anagnostes"; and it was probably while holding this office, which in the Greek Church involves preaching as well as reading, that he executed the Gothic translation of the Scriptures. Early in the year 341, having just reached the required age, he was consecrated bishop of the Goths by Eusebius of Nicomedia at Antioch, and immediately returned to his people across the Danube. After laboring among them for seven years, he and his converts were obliged by the persecution of the heathen prince Athanaric to take refuge within the limits of the Roman empire, and for the rest of his life he continued to labor in the country of the Balkans.

Ulke, Henry, a Prussian American portrait painter; born in Frankenstein, Prussia, Jan. 29, 1821; in 1851 he came to the United States and established a studio in Washington, D. C. He became well known as an entomologist and also as a musical critic. His portraits include those of President Grant, John Sherman, James G. Blaine, Secretary Stanton, Generals Rawlins, Blair, Spinner, and other prominent men. He died in 1910.

Ultima Thule (Uppermost Thule), a name given in ancient times by the inhabitants of Southern Europe to the remote regions of the unknown North. The Greek navigator Pytheas (who probably lived in the latter part of the 4th century B. C.) made a voyage along the coast of Britain and wrote an account of what he learned about the Shetland and Orkney Islands and possibly the N. mainland calling the region Thule. The name became vague in its application, especially under the form Ultima Thule. Norway, Ireland, etc., bore the title in turn; and many strange superstitions were current regarding the region.

Ultramarine, a brilliant blue color, in very extensive use by painters, paper stainers, calico printers, and others. The substance previous to the year 1828 was obtained only from lazulite or lapis lazuli, a beautiful and costly mineral substance. The mineral being rare, and much prized for ornamental inlaying, and the color being of unapproachable brilliance and depth, it was an extremely expensive pigment. In consequence, strenuous efforts were made to obtain an equally valuable product by artificial means. In 1824 the French Societe d' Encouragement pour l' Industrie Nationale offered a premium of 6,000 francs for the manufacture of an ultramarine blue, possessing all the qualities

of that extracted from lapis lazuli, and in 1828 the prize was awarded to M. Guimet of Lyons, who after four years' investigation succeeded perfectly in producing the valuable substance by a synthetical process.

Ulugh Beg, the grandson of Timur, or Tamerlane; governed Western Turkestan as regent for his father Shah Rokh, and succeeded in 1447 to the imperial throne on his father's death. He was a successful warrior, but happened, unfortunately, to conceive suspicions of the loyalty of his eldest son, suspicions founded only on astrological indications. The offended and injured prince rebelled, defeated and captured his father, and soon after caused him to be put to death, thus fulfilling the prediction, 1449. Ulugh Beg is known to posterity as the founder of the observatory at Samarcand, as the liberal patron of astronomers, and as himself a most diligent observer. The astronomical tables which bear his name, enjoy a high reputation for accuracy. The astronomical works of Ulugh Beg were written in Arabic, afterward translated into Persian, and thence the chronological portion of them rendered into Latin by Greaves, who followed with a Latin version of the geographical part in 1652.

Ulysses, in heroic history, one of the most renowned of the Greek heroes. Ulysses was the King of Ithaca, one of the small Ionian isles, the husband of the exemplary Penelope, and father of Telemachus. Ulysses was not only a prudent warrior, but a sage counsellor, and was as much honored in the general conference as he was valued in the field for his military skill, ready expedients, and undaunted courage.

Uma, in Hindu mythology, one of the principal names of the consort of the god Siva. The myths relating to this goddess, who is worshiped in various parts of India — particularly, however, in Bengal — are met with in the great epic poems. She is often represented holding the severed head of Chanda in her hand, with the heads of his soldiers formed into a garland suspended from her neck, and their hands wreathed into a covering round her loins — the only covering she has in the image construeted for the puja.

Umber, a well-known pigment of an olive-brown color in its raw state, but much redder when burnt. It consists of an ocherous earth containing manganese, is durable, has a good body, and is useful in oil and water-color painting. It is of a brown citrine color, semi-opaque, has all the properties of good ocher, is perfectly durable both in water and oil, and one of the best drying colors we possess. It injures no other good pigment with which it may be mixed.

Umbilical Cord, or Navel String, the bond of communication between the fœtus (which enters at the umbilicus, or navel) and the placenta, which is attached to the inner surface of the maternal womb. It consists of the umbilical vein lying in the center of the two umbilical arteries winding from left to right round the vein. As soon as a child is born, and its respiration fairly established, the umbilical cord is tied, and divided near the navel, which spontaneously closes, the fragment of cord dying away.

Umbrella, a light frame covered with silk, cotton, alpaca, or other fabric, and held above the head as a protection against sun or rain. The use of the umbrella came to us from the East, where it has been in use from remote times, and where it is considered as a symbol of royalty or dignity. As a defense against rain it was not generally used in the Occident till the middle of the 18th century.

Umbrella Bird, in ornithology, a native of Peru. It is about the size of a crow, with deep black plumage; the head is adorned with a large spreading crest, which arises from a contractile skin, and capable of being erected at will; the shafts of the crest-feathers are white, and the plumes glossy blue, hair-like and curved outward at the tips. When the crest is laid back the shafts form a compact white mass, sloping up from the back of the head; when it is erected the shafts radiate on all sides from the top of the head, reaching in front beyond and below the beak, which is thus completely concealed from view. A long cylindrical plume hangs down from the middle of

the neck; the feathers of the plume lap over each other like scales, and are bordered with metallic blue. Umbrella birds associate in small flocks, and live almost entirely upon fruits. Their cry, which resembles the lowing of a cow, is most frequently heard just before sunrise and after sunset.

Umbria, one of the ancient divisions of Italy; lying W. of Etruria, and N. of the country of the Sabines. It is usually described as extending from the Tiber E. to the Adriatic. The Umbrians were subjugated along with the Etruscans, but joined the Samnites in their last gallant struggle against Rome, and were crushed at Sentinum (295 B. C.). The modern Umbria is in large part embraced in the Province of Perugia, having an area of 3,770 square miles, and pop. (1921) of 638,991. This territory formed a portion of the Papal States till 1860, when it became a part of the dominions of Victor Emmanuel.

Unalaska, a village in Alaska, on the island of Unalaska, the most westerly of the group extending from the extremity of the Alaska peninsula. It contains a church, priest's residence, stores, and the warehouses and wharves of the Alaska Commercial Company. Unalaska is the most important settlement in Western Alaska, and the commercial center of all the trade in that section. It is the natural outfitting station for vessels passing between the Pacific and Arctic oceans, and a sub-port of entry. In the mountains back of the village is an active volcano. Population not separately reported.

Uncas, an Indian chief; born in 1600. He was on good terms with the whites, who constantly defended him and the Mohegans, of whom he was chief, against the Pequods and Narragansetts. In 1657 he is said to have presented the ground on which Norwich, Conn., stands to Ensign Leffingwell in return for his services. He died about 1682.

Uncle Sam, the familiar name of the United States government, used as John Bull is with respect to England. It is an extension of the letters U. S. (United States), printed or stamped on the government property. It was first used in Troy, N. Y., in 1812, when certain goods purchased for the government and branded U. S., were officially inspected by Samuel Wilson, whose local nickname was "Uncle Sam." The coincidence of initials suggested the application of the nickname in full to the government.

Unclean Animals, in Jewish antiquities, certain animals which were regarded as ceremonially unclean, and not therefore to be eaten. Most animals that "chew the cud" might be eaten, with the exception of the camel, the coney, the hare, and the swine, only the first of which is a true ruminant. A number of birds — the "eagle," the "ossifrage," the "vulture," the "kite," etc.— were to be deemed unclean and abominable. Much difficulty arises in identifying some of the birds referred to; but one broad fact is undoubted—that the Raptores were deemed ceremonially impure, while most of the grain-feeding birds were allowed as articles of food. Unclean fishes were those which had not fins or scales. With the exception of what would now be called the leaping orthoptera — locusts, grasshoppers, etc. most insects were unclean, as were most creeping things, from vertebrate reptiles to molluscous snails. Not merely were the unclean animals to be rejected as articles of food, their carcasses were to be avoided, as the individual touching them would be unclean. Apart from the ceremonial law, the flesh of the prohibited animals was generally less wholesome than that of those allowed.

Uncovenanted Mercy, in theology, an expression used of something not promised by God in any covenant, and specially in the covenant of grace or redemption. For instance, to give Eternal Life to those who believe in Christ promised by God is now regarded as part of a covenant on the part of God, with those who believe in Christ, to extend salvation to those who have not had opportunity of hearing of Christ, is held to be an uncovenanted mercy.

Unction ("anointing with oil"), a practice adopted in the Roman Catholic Church, but repudiated by Protestants. It is used in the consecration of altars; of persons about to be bap-

tized; in confirmation; at the consecration of priests; and of persons near death; in which last instance it is called "Extreme Unction." Olive oil alone is used, and it must have been consecrated by a bishop. The word is used among Protestants in connection with preaching or prayer, implying the gracious assistance of the Holy Spirit, quickening the mental powers, and inspiring the utterances.

Underwood, Benjamin Franklin, an American author; born in New York city, July 6, 1839. After the Civil War he devoted himself to lecturing and was especially prominent in 1870–1885 as a representative of the religious "free thought" movements. He became co-editor of the Boston "Index," and editor of other journals and a contributor to magazines. He died Nov. 10, 1914.

Underwood, Francis Henry, an American author; born in Enfield, Mass., Jan. 12, 1825. In 1885 he was appointed United States consul at Glasgow; in 1888 the University of Glasgow conferred upon him the degree of LL. D. His works include a "Handbook of American Literature"; "Cloud Pictures," a series of imaginative stories musical in theme; "Lord of Himself," a novel of old times in Kentucky. He died in Edinburgh, Scotland, Aug. 7, 1894.

Underwood, Lucien Marcus, an American botanist; born in New Woodstock, N. Y., Oct. 26, 1853. He was instructor in several colleges in Illinois; at Syracuse University, and at De Pauw University. He was made Professor of Botany at Columbia University in 1896. He was the author of "Descriptive Catalogue of North America Hepaticae," and other works. He died Nov. 16, 1907.

Underwood, Oscar W., an American statesman; born in Louisville, Ky., May 6, 1862; received a university education; settled in Birmingham, Ala., and was admitted to the bar in 1884; chairman of the commission that framed the present State constitution; first elected to Congress in 1895; chairman of the Committee on Ways and Means in 1911; majority leader in the House, 1913; U. S. Senator, terms, 1915-27. Died Jan. 24, 1929.

Unicorn, an animal having a single horn, frequently mentioned by Greek and Latin authors. Ctesias calls it the wild ass, and Aristotle the Indian ass. Ctesias describes the wild ass as being about the size of a horse, with a white body, red head, and blue eyes, having a horn on the forehead a cubit long, which for the extent of two palms from the forehead is entirely white, black in the middle, and pointed and red at the extremity. Of these horn drinking cups were formed, and those who used them were said not to be subject to spasm, epilepsy, or the effects of poison. Unicorns were said to be very swift and strong, not naturally fierce, but when provoked, they fought desperately with horn, heels, and teeth, so that it was impossible to take them alive.

Unigenitus Bull, one of the most important documents in the history of Jansenism. It was occasioned by the publication of the "Moral Reflexions" of Quesnel, in which all the essential principles of Jansenism were revived, and although cautiously, yet systematically explained, so as to form the basis of that practical, moral, and religious teaching which it is the object of the "Moral Reflexions" to convey. The book was at first simply prohibited by a brief of Pope Innocent XI., in the year 1708; but as it found many patrons, and especially the Archbishop of Paris, Cardinal de Noailles, it was deemed necessary to subject it to a more detailed examination, the result of which was that 101 propositions were extracted from it, and formally condemned, in 1713, by a bull commencing with the word "Unigenitus."

Union Biblical Seminary, the theological seminary of the United Brethren in Christ, at Dayton, O., founded in 1871.

Union College, a coeducational, non-sectarian institution in College View, Neb., founded in 1891.

Union College, an American institution of learning established in Schenectady, N. Y., in 1795 by several religious denominations, from which fact it derives its name. It was the first non-sectarian college incorporated in the United States. The first president was the Rev. John Blair Smith.

Unionism, in the United States, the political principles of those who during the Civil War opposed secession; in Great Britain, the doctrine that the legislative union between Great Britain and Ireland, and the supremacy of the Imperial Parliament over any form of local government or Home Rule granted to Ireland, must be maintained; in general, the system of union or combination among workmen engaged in the same occupation or trade. See TRADES UNION.

Union Jack, the national banner of the United Kingdom of Great Britain, is formed by the union of the cross of St. George (red on white ground), the diagonal cross or saltire of St. Andrew (white on a blue ground), and the diagonal cross or saltire of St. Patrick (red on a white ground).

Union League Club, a club organized in 1863, by members of the Republican party in New York, for social and political purposes.

Union Theological Seminary, an institution for theological education; founded in New York city by the Presbyterian Church in 1836.

Uniontown, a borough and county-seat of Fayette co., Pa.; on the Pennsylvania and the Baltimore & Ohio railroads; 70 miles S. E. of Pittsburgh. It is the center of the greatest coke-producing region in the world; has manufactories of iron, steel, radiators, glass, brick, carriages, and malt liquors, and large coal and coke interests; and contains National and State banks, Madison College, Soldiers' Orphans' Home, and attractive mountain resorts. Pop. (1930) 19,545.

Unitarian Church, a communion comprising all who maintain that God exists in one Person only. The name Unitarian is applied specially to a small Christian sect whose distinguishing tenet is the Unity as opposed to the Trinity of the Godhead. From the middle of the 2d century to the end of the 3d century there was a succession of eminent Christian teachers—Monarchians—who maintained, against the ecclesiastical doctrine of the Logos, the undivided unity of God. There are said to have been two classes of them—those who taught that Christ was God in such a sense that it was the Father who became man and those who held that Christ was in nature a mere man, but exalted above all other prophets by the superior measure of Divine wisdom with which he was endowed.

Unitarians reject the entire orthodox scheme—including the doctrines of the Trinity, the vicarious atonement, the deity of Christ, original sin, and everlasting punishment—as unscriptural and irrational. They celebrate the Lord's Supper, not as a sacrament, but as a service commemorative of Christ's death, and expressive of spiritual communion with Him. They also adhere generally to the rite of infant baptism, though there are a few Unitarian Baptist churches.

In 1927 it was reported that there were 422 churches, with 131,240 members. Sunday Schools of this denomination had 21,098 pupils and 3,265 teachers. The receipts for current church activities were $739,244.

United American Mechanics, Junior Order of, an American beneficial organization founded in 1853. Membership (1916) 250,950.

United American Mechanics, Order of, beneficial order founded in 1845; membership (1916) 38,212.

United Brethren in Christ, a denomination of evangelical Christians, founded through the labors of Rev. William Otterbein, a minister of the German Reformed Church. His meeting with Rev. Martin Boehm, a minister of the Mennonite Society, about 1766, marked the beginning of a wide-spread revival, in which he and Boehm were the recognized leaders. Preachers were licensed, the church was to a certain extent brought under system, conferences were held in 1789 and 1791, but the religious movement did not take the form of a Church till 1800, in which year an important conference was held at Peter Kemp's in Frederick co., Md. At this time the name of the denomination was definitely fixed, and Otterbein and Boehm were chosen bishops. Thereafter conferences were held yearly. The Church is Arminian in doctrine, very aggressive in work, and has been characterized by a strong reform spirit, standing from the first opposed to slavery, intemperance, and connection with secret societies. The

Church insists on the observance of the sacraments, but leaves the mode of baptism to the conviction of the candidate. A personal religious experience is necessary to membership. Originating in Maryland, Pennsylvania, and Virginia, the Church extended first to the Middle States, and then principally to the West. There were (1916) two bodies, with total churches, 4,022; ministers, 2,185; members, 360,387.

United Greeks, in Church history, a comprehensive name including all those who follow the Greek rite, and at the same time acknowledge the authority of the Pope.

United Kingdom of Great Britain and Ireland. As Great Britain was the political progenitor of the United States, it may be of interest to note the origin and growth of popular government in that country. The English parliamentary system had two distinct roots—in the nobility and the towns. The numerous class of agricultural workers was for ages in a state not unlike the peonage of Old and New Mexico, and became only within half a century past an element to be reckoned with in politics. For centuries following the Norman conquest the nobleman in his castle was a minor sovereign, while the tradesmen in the towns accumulating wealth and in close contact, in London at least, with king and court, soon proved themselves too valuable to the crown to be ignored in the affairs of the kingdom. That sagacious monarch, Edward the First, was not only England's greatest general that wore a crown, but also the greatest of her royal statesmen, and under him the British Parliament of today had its real origin. Under him also England and Scotland would have been permanently united but for his mistake in supposing that the Scotch could be subdued by the cruel severities which he and his commanders practised in that country. The wars of the Roses, in the 15th century, almost effaced the ancient nobility, and made it possible for the Tudors to be omnipotent, with a servile Parliament. But while the Tudors were tyrants at home their policy abroad — Mary excepted — built up commerce and wealth for England, made the trading classes richer than ever before, and fortified them for their struggle against the autocratic Stuarts. The Reformation also aroused the conscience of the Nation, and animated Englishmen to make a stand for civil as well as religious emancipation. When the Parliament sent a king to the scaffold for treason it gave an example that neither kings nor people could forget, and while reaction was inevitable from a course so far in advance of an age in which the divine right of royalty was unquestioned outside of Great Britain, yet it was impossible thenceforth for an English king to attempt with impunity the usurpations for which Charles I. paid with his life. James II. was driven from the throne because he offended the religious faith of the great majority of Englishmen, and when Parliament exacted from William and Mary their consent to the Bill of Rights, and later, in the reign of William III. diverted the succession, it clearly established in practise if not in theory, its own preëminence over the crown.

All through these centuries of conflict and progress and sometimes of reaction it was not, however, a Parliament of the people, as we understand that term today. Up to the 19th century the landed gentry and the wealthy middle class elected and were elected to the Commons. The Reform Bill of 1832, passed after fierce Parliamentary strife, in which the Lords made their last great rally for the maintenance of oligarchy, first opened to the common people the prospect of a voice in the government. Chartism followed, with its agitation almost reaching civil war, for a more extended suffrage and other steps in the direction of popular rule. Chartism was put down by military force, and it was not until 1867–68 that a real Reform Bill was adopted which conferred household suffrage throughout Great Britain. The "People Act" of 1884 made suffrage general, and in the following year an act was passed effecting an equitable distribution of Parliamentary seats.

The Parliament thus constituted — the House of Lords retaining a part of its ancient privileges — is, with the crown, in absolute control over the

British empire. Crown and Parliament can by their concurrent action, pass or repeal any law, efface any right, and even contravene, as in the disestablishment of the Irish Church, the oath which the sovereign had taken in assuming the crown. There is no constitution, as in the United States, to direct and restrict the legislature. The so-called British Constitution consists of the principles of government which the ruling classes of England have learned throughout centuries of experience to regard as fundamental and inviolable. They had their origin in the "ancient custom of England," the laws of Saxon and Dane, breathing the freedom of forest and Northland, and the spirit of fair-dealing between man and man. Norman feudalism, while reducing the mass of Saxons to bondage, did not utterly efface the old institutions, and the covenant between the barons and King John at Runnymede was in large degree a revival of rights which that most worthless of English kings had sought to efface. The Magna Charta is justly regarded as the basis of English liberties, but to Americans the Declaration, or Bill of Rights, by both Houses of the English Parliament when the crown was offered to William and Mary, is of even more reverent interest, as it was not only the "greater charter" of the English people, but also the original charter of American liberty, and its spirit and language can be clearly traced in the Declaration of Independence. Respect for the rights of property, speedy and impartial justice, jury trial, and the right of every person to the protection of the laws are among the constitutional safeguards which Parliament would never dare to invade.

The reigning house of Great Britain owes its title to the throne to Act of Parliament passed, as already noted, in the reign of William III., whereby the succession to the crown of Great Britain and Ireland was settled on the Princess Sophia of Hanover "and the heirs of her body, being Protestants." This was done to prevent a recurrence of the trouble caused in the previous reign by the fact that James II. was a Roman Catholic, and sought to convert the nation to his views. Without this Act of Parliament the male descendants of James II. and their heirs would have inherited the throne. Parliament, in diverting the crown to the Protestant branch of the family, kept it, however, within the ancient lineage, and King George can, therefore, claim to reign also by inheritance. The crown has the right to approve or disapprove Acts of Parliament, which, without such approval, are void. This power is never, in this age, used in the negative, and if a bill passes the House of Commons and the House of Lords the royal assent is invariably given. All authority of the crown is exercised through the Cabinet, whose members represent the majority in Parliament, and are themselves members of Parliament, and should the Cabinet fail of a majority in the House of Commons on any issue indicating a lack of confidence in the Ministry, the ministers resign, and a new election is held. It has been known that a weary Premier has resigned on a trivial defeat, not indicating any loss of confidence, simply because he desired to withdraw for a time from office, or felt sure of a stronger support in a newly elected Parliament.

The Cabinet, representing Parliament and Crown, administers in every detail the affairs of the Kingdom, and also all matters of imperial concern. Its chief is usually the acknowledged political leader of the party having a majority in the House of Commons, and he selects his associates, who are also men of eminence. In this essential feature the British ministry differs altogether from the American Cabinet, whose members may have been invited from obscurity, and are simply servants of the President, and often antagonistic to the majority in Congress.

It should not be supposed, however, that the king of Great Britain is without real authority. His social influence is almost omnipotent, he is consulted by his ministers on public affairs, and his views have great influence upon the course of events. In matters affecting military and naval promotions, the distribution of titles and honors, and to some degree in the foreign relations of the empire, his expressions are authoritative. It is generally understood, for instance, that the late Prince Consort, husband

of Queen Victoria, had a decisive influence in preventing Great Britain from antagonizing the United States in the early part of our Civil War. It is also understood that the influence of King Edward largely contributed to the success of the negotiations for the treaty of arbitration between France and England in October, 1903.

The House of Lords can, if it chooses, disagree with the House of Commons. It has rarely done so of late years, however, and only when its members felt that a large proportion, and probably a majority of the people also disagreed with the Commons. Any persistent obstruction by the House of Lords to the manifest will of the people would obviously invite the abolition of the upper branch of Parliament.

The House of Commons, since the reforms of 1884–85, is the British Nation in miniature. A seat in the House is the goal of ability and ambition, and every class is represented on its benches. In debate the House is extremely tolerant. Nothing short of a riot or malicious personal insult provokes warning from the Speaker, and perhaps suspension, and the rights of an offending member are jealously guarded. The Cabinet is always represented, either by its chiefs, or assistant secretaries, ready to defend its acts, and to answer questions of which due notice has been given. Thus the business of the Nation is threshed out day after day in the electric light of a free press and virtually in the hearing of the people from Land's End to John O'Groat's.

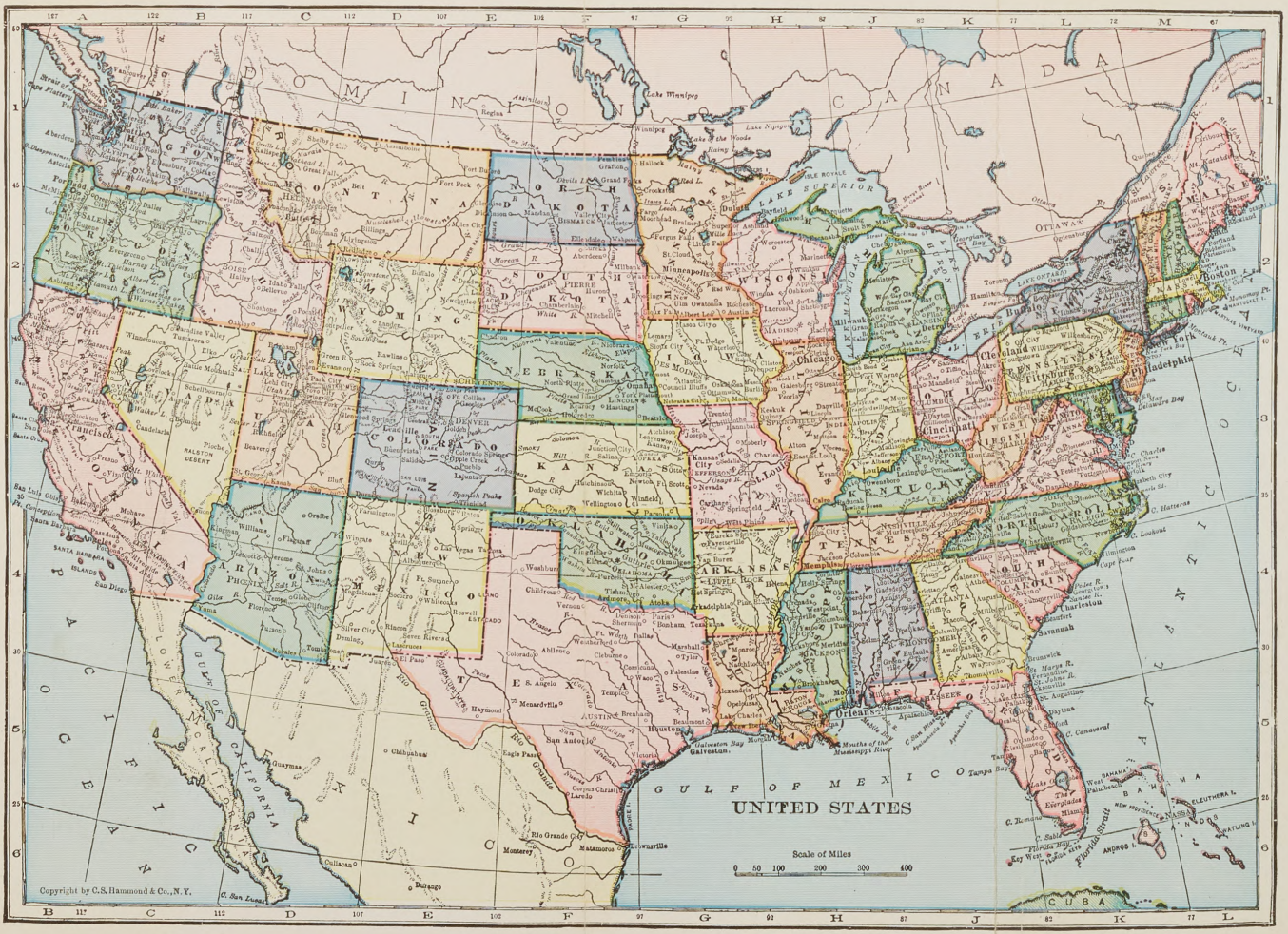
Parliament usually meets in February, and sits until the end of August, reversing the American rule of winter sessions. Every session ends with a prorogation, and all bills which have not passed during the session are dropped. Elections to Parliament are by secret ballot, and as almost one-sixth of the population are electors, suffrage is practically universal.

The area of the United Kingdom of Great Britain and Ireland is 121,633 square miles, or a little more than the combined area of New York, Pennsylvania and West Virginia. England, apart from Wales, is a little larger than the State of New York, while Ireland is about two thousand square miles larger, and Scotland about six hundred square miles smaller than South Carolina. The population of the United Kingdom was (1928 Est.) 44,375,000 of whom over 39,482,000 lived in England and Wales, that is, in an area somewhat smaller than the State of Michigan, which had a population of (1928) 4,591,000, and yet England can hardly be described as overcrowded. The entire population of the empire subject to this little island of Great Britain was (1921) 441,595,965, and the area, 13,406,103. These figures were largely increased by the regions captured from the Germans in the World War. This great Empire is p o l i c e d by a comparatively small army, the chief strength lying in the navy.

The established church of England is Protestant Episcopal, but all others are fully tolerated. The king is the supreme ruler of the church, the convocations which manage ecclesiastical affairs are summoned by the archbishops in pursuance of the king's mandate, and when assembled they must have the king's license before they can deliberate. The voluntary offerings in the Church of England in 1925 amounted to $51,242,120. The dissenting bodies are very numerous. The Church of Scotland is organized on the Presbyterian system of government, and has a General Assembly, partly clerical and partly lay, which meets annually in May. The large majority of the Irish are Roman Catholics (total number, 3,242,670), but the Protestant Episcopal Church of Ireland claimed (1911) 576,611 members, and there were 440,525 Presbyterians, and smaller numbers of other sects.

So many interests of the United Kingdom were affected by the great war that it was impossible to consider them with any accuracy at the time of writing. For mention of the leading events in the war, see APPENDIX: *World War.*

United Presbyterian Church, a religious body in Scotland, constituted in 1847 by the amalgamation of the "Secession" and "Relief" churches. The immediate cause of the formation of the Secession Church was the restoration in 1712 of the obnoxious


UNITED STATES
Scale of Miles
0 50 100 200 300 400
Copyright by C.S. Hammond & Co., N.Y.
DOMINION OF CANADA
GULF OF MEXICO
PACIFIC OCEAN
ATLANTIC OCEAN
CUBA

SCENES AT WEST POINT MILITARY ACADEMY



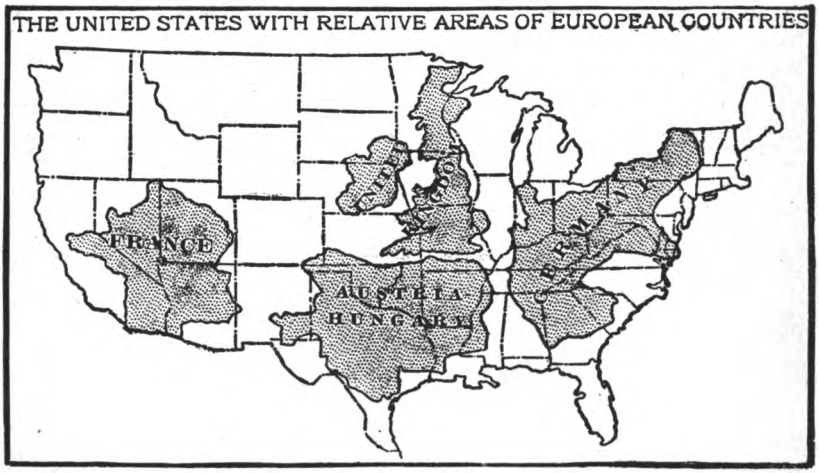
1—Inspection at Parade Grounds.
2—Gymnasium and Barracks.
3—Panorama West Point and Campus.
4—Review at West Point.

Photos by Brown Bros.

Law of Patronage. In point of doctrine it adheres to the Westminster Confession of Faith, and the Larger and Shorter Catechisms. The United Presbyterian Church of North America in 1916 reported 1,136 churches, 1,151 ministers, and 153,651 communicants.

United States Christian Commission, an organization founded by the National Young Men's Christian Association to perform religious and charitable work among the Union forces during the Civil War.

United States of America, a Federal republic, composed (1929)



of 48 States, the Territories of Hawaii and Porto Rico, a Federal District, and the District of Alaska; besides the Philippine Islands, Guam, Tutuila, and other possessions; chiefly occupying the temperate portions of North America from lat. 24° 20′ to 49° N., and lon. 66° 48′ to 124° 32′ W.

Boundary.—The United States is bounded on the N. by British North America, the boundary line running through the Strait of Juan de Fuca to the S. of Vancouver's Island, but to the N. of the island of San Juan, striking the mainland at the 49th parallel and running along that parallel to the Lake of the Woods, and thence by a devious route through the Great Lakes and along the Laurentian water-shed to the St. John's and St. Croix rivers and Fundy Bay. The land boundary is a clearing 30 feet wide, with iron mile posts 4 feet high painted white. The E. and W. boundaries are formed by the Atlantic and Pacific Oceans respectively, the S. boundary by the Gulf of Mexico, the Rio Grande del Norte up to the 32d parallel, and a broken line drawn between the 31st and 33d parallels to the Pacific separating the United States from Mexico. These boundaries do not include Alaska. The ocean shore lines are as follows: North Atlantic coast, including bays, islands, etc., 6,150 miles; South Atlantic coast, 6,209; Mexican Gulf coast, 5,744; Pacific coast, 3,251 — total, 21,354. The land, lake, and river boundary toward Canada is 3,700 miles, and the similar one toward Mexico, 2,105 miles; making the total ocean, land, lake, and river boundary, 27,159 miles. Excluding Alaska the greatest Continental extent E. and W. is 3,100 miles and N. and S., 1,780 miles.

Area.—The following table shows the surface areas in square miles of all continental and insular posses-

sions on June 30, 1925:

State or Territory.	Land.	Water.	Total area.
Alabama	51,279	719	51,998
Arizona	113,810	146	113,956
Arkansas	52,525	810	53,335
California	155,652	2,645	158,297
Colorado	103,658	290	103,948
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Delaware	1,965	405	2,370
Dist. of Col...	60	10	70
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Kansas	81,774	384	82,158
Kentucky	40,181	417	40,598
Louisiana	45,409	3,097	48,506
Maine	29,895	3,145	33,040
Maryland	9,941	2,386	12,327
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S. Dakota.....	76,868	747	77,615
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West Virginia.	24,022	148	24,170
Wisconsin	55,256	810	56,066
Wyoming	97,594	320	97,914
	2,973,890	52,899	3,026,789
Alaska	.....	.....	590,884
Guam	.....	.....	210
Hawaii	.....	.....	6,449
Pan. Can. Zone	.....	.....	436
Philippine Is..	.....	.....	115,026
Porto Rico....	.....	.....	3,435
Tutuila Group, Samoa	.....	.....	77
Total.....	.....	.....	3,743,306

In addition to the above water area, Illinois has 1,674 sq. m. of Lake Mich.; Indiana, 230 of Lake Michigan; Michigan, 16,653 of Lake Superior, 12,922 of Lake Michigan, 9,925 of Lake Huron, and 460 of Lakes St. Clair and Erie; Minnesota, 2,514 of Lake Superior; New York, 3,140 of Lakes Ontario and Erie; Ohio, 3,443 of Lake Erie; Pennsylvania, 891 of Lake Erie; and Wisconsin, 2,378 of Lake Superior and 7,500 of Lake Michigan. California, Oregon, and Texas claim jurisdiction over Pacific and Gulf waters for certain distances from their coast lines.

Topography.— The two great mountain systems of the United States are the Appalachians and the Rocky Mountains. The former extend from the mouth of the St. Lawrence to the mouth of the Mississippi — a distance of 1,300 miles — and at the S. bend inland, leaving the wide and rich seaboard of Virginia, the Carolinas, Georgia, Alabama, and Florida. This maritime region includes all the other States and its inhabitants still amount to one-third of the whole. As far S. as the Hudson river it is hilly; thence, as far as the Alleghenies extend, its surface is divided between a plain and a mountain slope, the base of which appears to have been the shore of an ancient sea. The most fertile part of this slope is between Long Island and the Potomac. The coast to the Mississippi is sandy throughout; from Long Island to North Carolina it is marshy only close to the sea, but further S. the seaward half of the plain is covered with swamp. The Appalachians form the watershed between the rivers draining into the Atlantic and the tributaries to the Mississippi, though some of the former may be said to rise on the inland side of the mountains, and to force a passage through them to the sea. The principal rivers falling into the Atlantic are the Penobscot, Kennebec, Merrimac, Connecticut, Hudson, Delaware, Susquhanna, Potomac, Rappahannock, James, Roanoke, Pedee, Santee, Savannah, and Altamaha. The Chattahoochee and the Flint rivers joining form the Appalachicola: the Alabama and Tombigbee the Mobile; these drain into the Gulf of Mexico E. of the Mississippi.

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rainfall ranges from 38 to 59 inches in the S. of Florida and along the N. W. Pacific coast; 44 to 51 inches over the New England coast and the greater part of the Southern States, while in New York, Pennsylvania, Illinois, etc., it is 32–44 inches. In Texas, Oklahoma, Eastern Kansas and Nebraska, the Dakotas and Minnesota, and Western California, it is 20–32 inches, while in the tract between 98° and 118° it ranges from 18 to 4 inches. Malarial diseases prevail in the lowlands of most of the Southern States, as also in the new and marshy portions of the Western States below lat. 40° N. Consumption and chest diseases prevail in New England and in the Middle States. Minnesota, Colorado, California, Arkansas, Georgia, and Florida are favorite resorts for persons with weak lungs. On the whole the climate of the United States may be called heathful, malarious and deadly spots being very few; while certain districts, especially of Florida, the central plains, and the Pacific coast, are among the most salubrious in the world.

Geology.— Geologically as well as geographically the United States is divided into two great sections by the Rocky Mountains, along whose whole extent, in a wide belt from N. to S., Cretaceous formations predominate, with occasional stretches of Carboniferous strata. Tertiary formations embrace almost the whole of the basin between the Rocky Mountains and the Pacific Alps broken by igneous rocks in parts of Washington and Oregon, and Metamorphic strata along the Sierras; in the E. section Tertiary formations stretch along the coast from the Rio Grande almost to the Hudson. Metamorphic, igneous, and Devonian rocks prevail in New England, and along the shores of the Great Lakes the Middle Devonian or Old Red Sandstone. Older Palæozoic groups occur in Wisconsin, Ohio, and Tennessee, and run side by side with Metamorphic strata along the Appalachians, while a large proportion of the interior is occupied by great Carboniferous deposits..

The coal areas of the United States embrace two great divisions, viz; the anthracite, confined almost exclusively to the E. part of Pennsylvania, but with smaller areas in Colorado and New Mexico, and the bituminous, scattered widely over the entire country, and including an area of 496,000 square miles. Of the total 1929 production, anthracite furnished 68,429,000 tons, and bituminous, 532,352,000 tons.

Next to coal came, in the order given, pig iron, 41,549,000 long tons, valued at $731,858,000; petroleum, 1,005,598 barrels, valued at $1,240,006,000; copper, 2,003,000 pounds, valued at $352,504,000.

In 1929 the principal farm crops and their value were as follows:

Corn	2,622,189,000 bu.	$2,048,134,000
Wheat	806,508,000 bu.	840,921,000
Oats	1,238,654,000 bu.	538,445,000
Rye	40,629,000 bu.	35,371,000
Barley	307,105,000 bu.	168,807,000
Buckwheat	11,505,000 bu.	11,241,000
Potatoes	357,451,000 bu.	469,701,000
Tobacco	1,500,891,000 lbs.	285,583,000
Hay	101,715,000 tons	1,244,256,000
Cotton	14,919,000 bales	1,225,032,000
Apples	139,754,000 bu.	184,107,000

The total value for 67 farm crops was estimated to be $8,644,689,000.

The livestock on January 1, 1930, was estimated as follows: Horses, 13,440,000; mules, 5,322,000; all cattle, 57,967,000; sheep, 48,913,000; swine, 52,600,000.

Irrigation.— Much of the wonderful development of the agricultural industry in the last few years has been due to the great work of the National government under the original irrigation Acts of Congress and more especially since the organization of the Reclamation Service in 1902. For irrigation purposes the country is divided into three sections, known as (1) the Arid States and Territories; (2) the Semi-Arid States and Territories; and (3) the Rice States. In 1911, President Taft submitted to Congress the report of a special board of army engineers to examine the various reclamation projects the government had undertaken and to recommend the proportions in which a special appropriation of $20,000,000 should be expended thereon. Irrigation and crop results on Government projects during 1929 showed: Irrigable acreage, 1,882,000; irrigated acreage, 1,484,000; farms, over 22,000; cropped acreage, 1,512,000; value

of crops, $88,459,000.

Flora and Fauna.—The indigenous plants of the United States are estimated at about 5,000 species, California alone producing at least 2,500. The potato, the tobacco plant, and maize, now so familiar in Europe, have all been introduced from the United States or Mexico. The United States is especially rich in valuable timber trees, of which no less than 120 species, growing in sufficient quantities to be of commercial importance, attain a height of 100 feet and upward. Of these 12 species reach an altitude of 200 feet, and 5 or 6 exceed 300 feet. Hickory, magnolia, liquid-amber, sassafras, and sequoia trees, to which species belong the giant trees of California, found only in a fossil state in the Old World, abound in the United States, as well as palmetto, tulip tree, cypress, cottonwood, live oak, and other oaks, and a number of trees more or less closely resembling the common species of Western Europe, to which the same names have been given. So far as they have been described and classified, the Vertebrata are estimated at 2,249 species, the Mollusca at about 1,434 species, while an eminent entomologist considers that there are probably over 50,000 species of insects.

Our forests now cover over 550,000,000 acres, or about one-fourth of the entire area of the continental United States, and of this acreage about four-fifths are privately owned and contain at least that proportion of all standing timber. At the present time the rate of cutting is three times the annual growth. Of the forests publicly owned, systematic forestry is now practiced on about 70 per cent, and on those privately owned less than 1 per cent.

The Forest Service of the United States has charge of the administration and protection of the National Forest Reservations, which in 1929, covered an area of 159,750,520 acres in 35 States and territories. The value of the public property administered by the Forest Service is estimated at over $4,500,000,000, and the conservation of the great areas of the forests by the government is beginning to serve the purpose of their reservation, especially in the Western States.

Manufactures. — Considering the aggregate value of products, manufacturing constitutes the leading industry of the United States.

In 1927 the Census Bureau reported that the manufacturing industry was represented as follows: There were 192,000 manufacturing establishments employing 8,349,755 wage earners, paying $35,133,137,000 for raw materials, $10,848,803,000 for wages and yielding products having a combined value of $62,718,347,000.

Food and kindred products ranked first in value with textiles and their products second and iron and steel, et cetera third.

Fisheries.—The Statistical Abstract for 1930 reported that there were engaged in the fisheries and fishing industries 128,339 persons, 87,228 vessels and boats. The annual production of fishery products by fishermen was about 3,089,908,000 lbs., valued at $116,384,000 and the production of by-products was valued at about $60,751,000.

In 1929, the fish canning and by-products industries of the United States and Alaska, attained a production valued at $124,833,000 of which canned goods amounted to $65,082,000 and by-products to $60,751,000. Canned salmon ranked the highest by far with a value of $56,086,000. Other canned goods were sardines, tuna and tuna-like fishes, shrimp, oysters, clams and other miscellaneous fish and shellfish. Of the by-products, fish oils ranked the highest; all products in this classification having a combined value of over $6,000,000.

Commercial species of fish were propagated on a large scale at the stations located on the Atlantic and Pacific coasts, and throughout the Great Lakes region. The total number of fish and eggs propagated in the fiscal year ended June 30, 1929, was 7,060,369,000.

Railroads.—In 1928 it was estimated that there were 249,309 miles of steam and 40,722 miles of electric railroads in the United States. There were 1,965,247 employees whose total pay for 1929 was over $3,000,000,000. There were 63,311 steam locomotives and 617 electric locomotives, 2,346,751

freight cars and 54,800 passenger cars in service.

Telegraph and Telephone.—A report compiled by the chief statistician of the American Telephone and Telegraph Company and issued July 1, 1930 gives the following data: There were 19,341,295 telephones in the United States handling a total of over 31,614,000,000 conversations in a single year.

In 1927 there were 25 telegraph systems or companies handling 229,582,433 messages. The number of employees was 81,498 and salaries amounted to $99,520,357. The total income was $182,997,698 and the total expenses $159,153,244.

Commerce.—The World War very seriously interfered with the normal commerce of the country, but in an abnormal respect it greatly increased the volume of exports in all lines. In the year ended June 30, 1930, the total imports had a value of $3,848,864,000 and the exports of $4,618,105,000. The United States has become the granary of the world, and besides foodstuffs, livestock, dressed meats, cotton, copper, oil, and countless other commodities.

Churches.—In 1928, the Department of Commerce issued a report on religious bodies of which the following is a summary:

Bodies	Churches	Members
All bodies	231,983	54,624,976
Adventists	2,576	146,177
Baptists	60,192	8,440,922
Brethren	1,279	158,248
Catholics, Roman	18,940	18,605,003
Christian Scientist	1,913	202,098
Congregationalists	5,028	881,696
Evangelical	2,054	206,080
Evan. Synod of North America	1,287	314,518
Lutheran	15,102	3,966,003
Mennonite	826	87,164
Methodist	60,644	8,070,619
Presbyterian	14,848	2,625,284
Prot. Episcopal	7,299	1,859,086
Salvation Army	1,052	74,768
Spiritualist	611	50,631
Unitarian	353	60,152
United Brethren	3,375	395,885
Universalist	498	54,957
Jewish	3,118	4,081,242

Banking.—For the year ending July 1, 1929, the comptroller of the currency reported that there were in the United States: 7,536 national banks with $1,627,375,000 capital, $1,479,052 surplus, total dividends, $222,672,000 and net profits $301,804,000.

The state banks had resources of $16,824,315,000; the mutual savings banks, $10,006,452,000; stock savings banks $1,589,845,000; trust companies $16,155,175,000; and private banks $156,490,000.

Postal Service.—In 1930 the United States Post Office revenue was $705,484,098, expenditures $803,700,085, leaving a deficit for the year of $98,215,987. Mail was transported over 1,327 steam railway and 226 electric railway routes entailing costs of $103,970,436 and $570,844 respectively. Air mail miles traveled was 14,939,468, pounds carried, 7,719,698, total cost of air service $14,618,231. A total of 22,685,940 dead letters was received at the dead letter office. Total value of dead letter enclosures was $5,429,756.

Army.—For the fiscal year 1929 there were in the United States Army 13,168 commissioned and 124,192 enlisted men. The National Guard had 12,535 commissioned and 164,453 enlisted men.

Navy.—On Nov. 1, 1930, there were 8 naval stations, 7 submarine bases, 4 training stations, 10 navy yards and 2 torpedo stations. There were also 8 naval air stations. The organized strength of the navy was as follows: Navy—officers, 8,905; enlisted men, 85,284; naval reserve officers, 6,078; enlisted men, 28,821; marine corps—officers, 1,182; enlisted men, 17,615; marine corps reserve—officers, 445, enlisted men, 9,119. The total strength was officers, 16,610, enlisted men, 148,330.

In 1928 there were 25,179,696 children enrolled in elementary schools with a daily attendance of 20,608,353. There were 138,193 male and 693,741 female teachers, or a total of 831,934. The salaries of teachers and superintendents was $1,164,583,000 and the total expenditure for education was $2,184,847,000.

In private and parochial schools there were 2,438,725 pupils enrolled. There were 1,076 colleges, universities and professional schools with 50,588 preparatory students and 695,219 collegiate students.

Population.—The following table shows the population of each of the States and Territories in 1910 and the census figures for 1930:

States and Territories.	Population, 1910.	Population, 1930.
Alabama	2,138,093	2,646,248
Alaska	64,356	59,278
Arizona	204,354	435,573
Arkansas	1,574,449	1,854,482
California	2,377,549	5,677,251
Colorado	799,024	1,035,791
Connecticut	1,114,756	1,606,903
Delaware	202,322	238,380
Dist. of Columbia	331,069	486,869
Florida	751,139	1,468,211
Georgia	2,609,121	2,908,506
Idaho	325,594	445,032
Illinois	5,638,591	7,630,654
Indiana	2,700,876	3,238,503
Iowa	2,224,771	2,470,939
Kansas	1,690,949	1,690,949
Kentucky	2,289,095	2,289,095
Louisiana	1,656,388	2,101,593
Maine	742,371	797,423
Maryland	1,295,346	1,631,526
Massachusetts	3,366,416	4,249,614
Michigan	2,810,173	4,842,325
Minnesota	2,075,708	2,563,953
Mississippi	1,797,114	2,009,821
Missouri	3,293,335	3,629,367
Montana	376,053	537,606
Nebraska	1,192,214	1,377,963
Nevada	81,875	91,058
New Hampshire	430,572	465,293
New Jersey	2,537,167	4,041,334
New Mexico	327,301	423,317
New York	9,113,614	12,588,066
North Carolina	2,206,287	3,170,276
North Dakota	577,056	680,845
Ohio	4,767,121	6,646,697
Oklahoma	1,657,155	2,396,040
Oregon	672,765	953,786
Pennsylvania	7,665,111	9,631,350
Rhode Island	542,610	687,497
South Carolina	1,515,400	1,738,765
South Dakota	583,888	692,849
Tennessee	2,184,789	2,616,556
Texas	3,896,542	5,824,715
Utah	373,351	507,847
Vermont	355,956	359,092
Virginia	2,061,612	2,421,851
Washington	1,141,990	1,563,396
West Virginia	1,221,119	1,729,205
Wisconsin	2,333,860	2,939,006
Wyoming	145,965	225,565
Total	91,972,266	122,775,046

Including the population of the Philippine Islands, 12,082,366; Hawaii, 368,336; Porto Rico, 1,543,913; persons in military and naval service abroad, 89,453; Guam, 18,509; Samoa, 10,055; Panama Canal Zone, 39,467; and Virgin Islands, 22,012, there was a total of about 137,008,435 under the flag in 1930.

The following table shows the population of the Continental United States according to each decennial census:

Year.	Population.	Year.	Population.
1790	3,929,214	1860	31,443,321
1800	5,308,483	1870	38,558,371
1810	7,239,881	1880	50,155,783
1820	9,638,453	1890	62,947,714
1830	12,866,020	1900	75,994,575
1840	17,069,453	1910	91,972,266
1850	23,191,876	1920	105,710,620

The center of population of the United States, in 1930, was in Stockton Township, Greene County, Ind., 22.9 miles northeast of Linton, 31 miles southeast by south of Terre Haute and 33.6 miles northeast by north of Vincennes.

Government.—The form of government of the United States is based on the Constitution of Sept. 17, 1787, to which 10 amendments were added Dec. 15, 1791; an 11th, Jan. 8, 1798; a 12th, Sept. 25, 1804; a 13th, Dec. 18, 1865; a 14th, July 28, 1868; a 15th, March 30, 1870; a 16th, Feb. 25, 1913; and a 17th, May 31, 1913; an 18th, Jan. 1, 1920; a 19th, Aug. 18, 1920. A twentieth amendment, Federal Regulation of Child Labor, is now (1925) being voted upon. The executive power is vested in a President, who holds his office during a term of four years, and is elected, together with a Vice-President, chosen for the same term, in the mode prescribed as follows: "Each State shall appoint, in such manner as the Legislature thereof may direct, a number of electors, equal to the whole number of senators and representatives to which the state may be entitled in the Congress; but no senator or representative, or person holding an office of trust or profit under the United States, shall be appointed an elector." The Constitution enacts that "the Congress may determine the time of choosing the electors, and the day on which they shall give their votes, which day shall be the same throughout the United States"; and further, that "no person except a natural-born citizen, or a citizen of the United States at the time of the adoption of

this Constitution, shall be eligible to the office of President; neither shall any person be eligible to that office who shall not have attained the age of 35 years, and been 14 years a resident within the United States." The President is commander-in-chief of the army and navy and of the militia in the service of the Union. He has the power of a veto on all laws passed by Congress; but, notwithstanding his veto, any bill may become a law on its being afterward passed by each House of Congress by a two-thirds vote. There is a popular belief that the President may not go beyond the limits of the country during his tenure of office. While there is no law to this effect, it has been customary for Presidents to "stay at home," a notable exception being President Wilson's visit to Europe in 1919.

The Vice-President is ex officio President of the Senate. The Presidential succession is fixed by chapter 4 of the acts of the 49th Congress, 1st session. In case of the removal, death, resignation, or inability of both the President and Vice-President, then the Secretary of State shall act as President till the disability of the President of Vice-President is removed or a President is elected. If there be no Secretary of State, then the Secretary of the Treasury will act; and the remainder of the order of succession is: Secretary of War, Attorney-General, Postmaster-General, Secretary of the Navy, and Secretary of the Interior (the office of Secretary of Agriculture and the office of Secretary of Commerce were created after the passage of the act). The acting President must, on taking office, convene Congress, if not at the time in session, in extraordinary session, given 20 days' notice. The following is a list of the Presidents:

No.	Name.	Qualified.
1	George Washington	April 30, 1789
	George Washington	March 4, 1793
2	John Adams	March 4, 1797
3	Thomas Jefferson	March 4, 1801
	Thomas Jefferson	March 4, 1805
4	James Madison	March 4, 1809
	James Madison	March 4, 1813
5	James Monroe	March 4, 1817
	James Monroe	March 5, 1821
6	John Quincy Adams	March 4, 1825
7	Andrew Jackson	March 4, 1829
	Andrew Jackson	March 4, 1833
8	Martin Van Buren	March 4, 1837
9	William H. Harrison	March 5, 1841
10	John Tyler	April 6, 1841
11	James K. Polk	March 4, 1845
12	Zachary Taylor	March 5, 1849
13	Millard Fillmore	July 9, 1850
14	Franklin Pierce	March 4, 1853
15	James Buchanan	March 4, 1857
16	Abraham Lincoln	March 4, 1861
	Abraham Lincoln	March 4, 1865
17	Andrew Johnson	April 15, 1865
18	Ulysses S. Grant	March 4, 1869
	Ulysses S. Grant	March 4, 1873
19	Rutherford B. Hayes	March 4, 1877
20	James A. Garfield	March 4, 1881
21	Chester A. Arthur	Sept. 20, 1881
22	Grover Cleveland	March 4, 1885
23	Benjamin Harrison	March 4, 1889
24	Grover Cleveland	March 4, 1893
25	William McKinley	March 4, 1897
	William McKinley	March 4, 1901
26	Theodore Roosevelt	Sept. 14, 1901
	Theodore Roosevelt	March 4, 1905
27	William H. Taft	March 4, 1909
28	Woodrow Wilson	March 4, 1913
	Woodrow Wilson	March 4, 1917
29	Warren G. Harding	March 4, 1921
30	Calvin Coolidge	Aug. 2, 1923
	Calvin Coolidge	March 4, 1925
31	Herbert Clark Hoover	March 4, 1929

The Congress.— The whole legislative power is vested by the Constitution in a Congress, consisting of a Senate and House of Representatives. The Senate consists of two members from each State, chosen by direct popular vote for six years. Senators must be not less than 30 years of age; must have been citizens of the United States for nine years; and be residents in the States from which they are chosen. Besides its legislative capacity the Senate is invested with the power of confirming or rejecting all appointments to office made by the President, and its members constitute a High Court of Impeachment. The judgment in the latter case extends only to the removal from office and disqualification. Representatives have the sole power of impeachment. The House of Representatives is composed of members elected every second year, by the vote of all male citizens over the age of 21 of the several States of the Union, who are qualified in accordance with the laws of their respective States. By the 15th Amendment to the Constitution, neither race nor color affects the rights of citizens. The franchise is absolutely universal; residence for at least one year in most States (in Michigan and Maine three months) is necessary; in some

States the payment of taxes, in others registration. Untaxed Indians and Chinese are excluded from the franchise; in most States convicts, in some States duelists and fraudulent voters; in Massachusetts voters are required to be able to read English. Certain Southern States have recently adopted restrictions on suffrage intended to exclude negroes from voting without violating the Constitution as amended. The number of members to which each State is entitled is determined by the census taken every ten years. Under the census of 1890 the total number of Representatives was fixed at 357; under that of 1900 at 391; under that of 1920, at 435.

History.—The territories now occupied by the United States of America, though they were probably visited on their N. E. coast by Norse navigators about the year 1000, continued the sole possession of numerous tribes of Indians till the rediscovery of America by Columbus in 1492. In 1498 an English expedition, under the command of Sebastian Cabot, explored the E. coast of America, from Labrador to Virginia, perhaps to Florida. In 1513 Juan Ponce de Leon landed near St. Augustine, Fla., and explored a portion of that region in a romantic search for the Fountain of Youth. In 1520 some Spanish vessels from San Domingo were driven upon the coast of Carolina. In 1521, by the conquests of Cortez and his followers, Mexico, including Texas, New Mexico, and California, became a province of Spain. In 1539–1542 Ferdinand de Soto led a Spanish expedition from the coast of Florida across Alabama, and discovered the Mississippi river. In 1584–1585 Sir Walter Raleigh sent two expeditions to the coast of North Carolina and attempted to form settlements on Roanoke Island. A Spanish settlement was made at St. Augustine, Florida, in 1565; Jamestown, Va., was settled in 1607; New York, then called the New Netherlands, in 1613; Plymouth, Mass., in 1620. A large part of the country on the Great Lakes and on the Mississippi was explored by La Salle in 1682; and settlements were made by the French at Kaskaskia and Arkansas Post in 1685, and at Mobile and Vincennes in 1702.

The first effort at a union of colonies was in 1643, when the settlements in Massachusetts, New Hampshire, Rhode Island, and Connecticut formed a confederacy for mutual defense against the French, Dutch, and Indians under the title of "The United Colonies of New England. In 1761 the enforcement of the Navigation Act against illegal traders, by general search warrants, caused a strong excitement against the English government, especially in Boston. The British admiralty enforced the law; and many vessels were seized, and the colonial trade with the West Indies was annihilated. In 1765 the passing of an act of Parliament for collecting a colonial revenue by stamps caused general indignation, and led to riots. Patrick Henry, in the Virginia Assembly, denied the right of Parliament to tax America, and eloquently asserted the dogma, "No taxation without representation." The first impulse was to unite against a common danger; and the first Colonial Congress of 29 delegates, representing nine colonies, made a statement of grievances and a declaration of rights. In 1766 the Stamp Act was repealed, but the principle of colonial taxation was not abandoned. In 1773 the duties were repealed, excepting 3d. a pound on tea.

It was now a question of principle, and from N. to S. it was determined that this tax should not be paid. Some cargoes were stored in damp warehouses and spoiled; some sent back, and in Boston a mob disguised as Indians threw it into the harbor. England then determined to enforce the government of the crown and Parliament over the colonies, and a fleet with 10,000 troops was sent to America, which led to the battle of Lexington, and the beginning of the Revolutionary War, April 19, 1775. The news that the British troops had been

compelled to beat a hasty retreat summoned 20,000 men to the vicinity of Boston. A Congress of the colonies assembled at Philadelphia and appointed George Washington Commander-in-Chief of an army of 20,000 men. The battle of Bunker Hill was fought at Charlestown, June 17, 1775, between 1,500 Americans, who had hastily entrenched themselves, and 2,000 British soldiers. When the Americans had exhausted their ammunition they were ordered to retreat; but as they had only lost 115 killed, 305 wounded, and 32 prisoners, while the loss on the British side was at least 1,054, the encounter had all the moral effect of a victory. After a winter of great privations the British were compelled to evacuate Boston, carrying away in their fleet to Halifax 1,500 loyal families. An army of 55,000 men, including 17,000 German mercenaries (Hessians), was sent under the command of Sir William Howe to put down this "wicked rebellion."

On June 7, 1776, Richard Henry Lee, of Virginia, offered a resolution in Congress, declaring that the united colonies "are, and ought to be, free and independent States; that they are absolved from all allegiance to the British crown; and that all political connection between them and the State of Great Britain is, and ought to be, totally dissolved." This resolution was adopted by the votes of 9 out of 13 colonies, and brought about the celebrated "Declaration of Independence," which on July 4, 1776, received the assent of the delegates of the colonies. They adopted the general title of the "United States of America," with a population of about 2,500,000. From the battle of Lexington, April 19, 1775, to the surrender of Yorktown, Oct. 19, 1781, in 24 engagements, including the surrender of two armies, the British losses in the field were not less than 25,000 men, while those of the Americans were about 8,000.

After the peace, concluded Sept. 3, 1783, the independence of the United States was acknowledged by foreign powers, and in 1787 the present Constitution was ratified. George Washington and John Adams, standing at the head of the Federalist party, were elected President and Vice-President of the United States. The War of 1812 grew out of the fact that England declined to put a stop to the abuse of impressing American citizens into the British navy, the attention of Congress having been called to 6,000 instances in 1811. In 1814 the Federalists of New England held a convention at Hartford in opposition to the war and the administration of President Madison, and in self-defence, threatened a secession of the New England States. See HARTFORD CONVENTION. The war was terminated by the treaty of Ghent, Dec. 24, 1814, though the English suffered a disastrous defeat at New Orleans, Jan. 8, 1815, nearly a month after peace had been concluded between England and America. The Democratic-Republican party having brought the war to a satisfactory conclusion, the Federalists disappeared; and in 1817 James Monroe was elected to the presidency.

At the period of the Revolution slavery existed in all the States except Massachusetts, but it had gradually been abolished in the Northern and Middle States, except Delaware, and excluded from the new States between the Ohio and the Mississippi rivers by the terms on which the territory had been surrendered by Virginia to the Union. The two sections had already entered on a struggle to maintain the balance of power against each other. After an exciting contest in 1820 Missouri was admitted with a resolution (the "Missouri Compromise") that in future no slave State should exist N. of the parallel of lat. 36° 30′ N. In 1826 two of the founders of the Republic, John Adams and Thomas Jefferson, died on July 4, the anniversary of the Declaration of Independence. In 1832 an Indian war, called the Black Hawk War, broke out in Wisconsin; but the passing of a high protective tariff act by Congress caused a more serious trouble. The State of South Carolina declared the act unconstitutional. A collision seemed imminent, when the affair was settled by a compromise bill, introduced by Henry Clay, providing for a gradual reduction of duties till 1843, when they should not exceed 20 per cent., ad valorem. In 1835 the Seminole War broke out in Florida, and a tribe of Indians, insignificant in numbers, under the crafty leadership of Osceola,

kept up hostilities for years at a cost to the United States of several thousand men, and some $50,000,000.

In 1837 Martin Van Buren succeeded General Jackson in the presidency. His term was a stormy one, from the great financial crisis of 1837, which followed a period of currency expansion and wild speculation. All the banks suspended payment, and the great commercial cities threatened insurrection. In 1840 General William H. Harrison was elected President, but died in 1841, a month after his inauguration. He was succeeded by John Tyler, during whose administration the N. E. boundary question, which nearly occasioned a war with England, was settled by Daniel Webster, Secretary of State, and Lord Ashburton. In 1845 Texas was formally annexed to the United States, and James K. Polk, of Tennessee, succeeded Mr. Tyler in the presidency. M. Almonte, the Mexican minister at Washington, protested against the annexation of Texas as an act of warlike aggression, which brought about the Mexican War in 1846.

In 1847 the Mexicans were defeated by General Taylor at Buena Vista; Vera Cruz was taken by storm, and Gen. Scott won the great battle of Cerro Gordo. In 1848 peace was signed, and by the treaty of Guadaloupe the United States obtained the cession of New Mexico and Upper California, the United States paying Mexico $15,000,000, and assuming the payment of the claims of American citizens against Mexico. In 1849, General Taylor, the "Rough and Ready" victor of Buena Vista, became President, with Millard Fillmore as Vice-President. In September of the same year California adopted a constitution which prohibited slavery. The election of Franklin Pierce in 1852 against General Scott was a triumph of the Democratic States' Rights and Southern party. A brutal assault on Charles Sumner, United States Senator from Massachusetts, by Preston Brooks, in consequence of a violent speech on Southern men and institutions, increased the excitement of both sections. In 1856 the Republicans, composed of the Northern Free-soil and Abolition parties, nominated John C. Fremont for the presidency, but James Buchanan, the Democratic candidate, received the election, with John C. Breckinridge as Vice-President. In October, 1859, John Brown, known in Kansas as "Ossawatomie Brown," who planned and led an expedition for freeing the negroes in Virginia, was captured, and executed Dec. 2, by the authorities of Virginia. His body was taken to his home in New York for burial, and he was regarded by the Abolition party as a martyr.

In 1860 the Southern delegates withdrew from the convention at Charleston, and two Democratic candidates were nominated, Stephen A. Douglas and John C. Breckinridge. The Republicans nominated Abraham Lincoln, and at the election of November, 1860, Mr. Lincoln received every Northern vote in the electoral college, except three of New Jersey, 180 votes. The South lost no time in acting on what her statesmen had declared would be the signal of their withdrawal from the Union. Four years of civil war ended in their being compelled to remain in it. In 1864 Mr. Lincoln was reëlected, and on March 4, 1865, commenced his second term, with Andrew Johnson as Vice-President. On April 14, 1865, while the North was rejoicing over the capture of Richmond and the surrender of the Confederate armies, the President was assassinated at a theater in Washington by John Wilkes Booth. The assassin was pursued and killed, and several of his accomplices were tried and executed. Andrew Johnson became President. Jefferson Davis, President of the Confederacy, fled after the surrender of Richmond; he was captured in Georgia, and released without trial in 1867.

An amendment to the Constitution forever abolishing slavery in the States and Territories of the Union was declared ratified by two-thirds of the States, Dec. 18, 1865. The vast change in the organization of the republic made by this new fundamental law was completed by the 14th and 15th Amendments, passed in 1868 and 1870, which gave to the former slaves all the rights and privileges of citizenship. The seceded States were readmitted to the Union on condition of their adhesion to the Constitution as

thus amended. Owing to the reconstruction policy after the Civil War, differences arose between President Johnson and Republican leaders in both houses of Congress. This antagonism finally led to the resolution of the House of Representatives, passed Feb. 24, 1868, to impeach the President "of high crimes and misdemeanors." President Johnson, however, was acquitted, as the prosecution lacked one vote of the two-thirds vote necessary for conviction. Gen. Ulysses S. Grant was elected President in 1868, and inaugurated March 4, 1869, with Schuyler Colfax as Vice-President. He was elected in 1872 for a second term with Henry Wilson as Vice-President. The Geneva Court of Arbitration gave its decree in favor of the United States in 1872, while the San Juan Boundary dispute with Great Britain was settled in favor of the United States by the Emperor of Germany in the same year. The outrages of a secret organization known as the Ku-Klux-Klan, in the Southern States, necessitated the passing of an act in 1871 giving cognizance of such offences to the United States courts.

The year 1876, memorable in the annals of the republic as the 100th anniversary of the Declaration of Independence, was celebrated by a great Centennial Exhibition at Philadelphia. The presidential election of the same year was so closely contested that Congress appointed a special tribunal, selected from the Senate, the House of Representatives, and the justices of the Supreme Court, to examine the election returns. The decision was in favor of Rutherford B. Hayes, the Republican candidate, who was declared to have been elected President, and inaugurated March 4, 1877. In 1879 specie payments were resumed throughout the United States, after a suspension of 17 years. In 1880 the Republican National Convention at Chicago nominated Gen. James A. Garfield, of Ohio, and Chester A. Arthur, of New York, for President and Vice-President. The Democratic National Convention was held in Cincinnati, O., and Gen. Winfield S. Hancock and William H. English, of Indiana, were selected as candidates. The result of the election was in favor of the Republicans. General Garfield was inaugurated March 4, 1881. On July 2, 1881, he was shot by a disappointed office-seeker, Charles J. Guiteau, and after more than two months of suffering died from the effects of the wound at Elberon, N. J., Sept. 19, 1881. His loss was lamented by the whole nation. He was succeeded by Vice-President Chester A. Arthur, who served the remainder of the term.

In 1884 the Democratic party nominated Grover Cleveland and Thomas A. Hendricks for the presidency and vice-presidency, while the Republicans put up James G. Blaine and John A. Logan. The election resulted in the choice of Grover Cleveland and Thomas A. Hendricks, who were inaugurated March 4, 1885. The death of General Grant, on July 23, 1885, was a notable event, and one that profoundly moved the whole nation. Mr. Hendricks died Nov. 25, 1885, and John Sherman, by virtue of his election as president pro tem. of the Senate, became his successor. Mr. Cleveland's administration was in the main uneventful, though the country was disturbed by widespread and obstinate conflicts between labor and capital. The silver coinage question, the reform of the civil service, the Mormon question, the labor problem, and the Pan-Electric controversy were the issues of the hour. The presidential compaign of 1888 had the tariff question for its main issue. Mr. Cleveland was renominated by the Democracy, with Allan G. Thurman for Vice-President, and Benjamin Harrison, of Indiana, grandson of the ninth President of the United States, and Levi P. Morton for Vice-President, were nominated by the Republicans. The latter were elected, the electoral vote standing 233 to 168. In 1889 four new States were added to the Union, namely, Montana, North Dakota, South Dakota, and Washington, and the Territory of Oklahoma was carved out of the Indian Territory. In 1890 Wyoming and Idaho were admitted to statehood.

In 1892 Mr. Harrison was renominated by the Republicans for President, and Whitelaw Reid, of New York, for Vice-President. The Democrats nominated Mr. Cleveland for President, and Adlai E. Stevenson, of Illinois, for Vice-President. Cleveland and Stevenson were elected by an

electoral vote of 277 for the ticket, against 145 for Harrison and Reid, and 22 for Weaver, the candidate of the People's party. The year 1893 was memorable for the monetary depression and hard times throughout the United States, and, to some extent, all over the world. Many thousands of men were out of employment; many financial institutions and business enterprises failed. Almost every form of security depreciated. A great railway strike, accompanied by much destruction of property and some loss of life, occurred on roads centering in Chicago; and others of less magnitude elsewhere. An army of unemployed men made a demonstration by marching across the country, subsisting on popular charity as they went, to the city of Washington, where they hoped to influence legislation by Congress, and action by the executive, to relieve the unemployed. This condition of things was popularly attributed to the administration, and to the Democratic tariff bill that had not yet been substituted for the McKinley bill, but was sure to be passed. As a consequence, in the State and Congressional elections of 1894 the Republicans obtained sweeping victories, and came into power in Congress. The administration was otherwise marked by its maintenance of friendly relations with Spain against the belligerent urgency of a large anti-Spanish party, friendly to Cuban independence; by the extension of civil service reform; and by the Arbitration Treaty of 1897.

The presidential campaign of 1896 was an unusually exciting one, with seven tickets in the field: Republican, William McKinley and Garret A. Hobart; Democratic, William J. Bryan and Arthur Sewall; Peoples', William J. Bryan and Thomas E. Watson; Prohibition, Joshua Levering and Hale Johnson; National Democratic, John M. Palmer and Simon B. Buckner; Social Labor, Charles H. Matchett and Matthew Maguire; and National (Free-Silver Prohibition), Chas. E. Bentley and James H. Southgate. In the election the Republican candidates received 7,104,779 popular and 271 electoral votes, and the fused Democratic and Peoples' candidates 6,502,925 popular and 176 electoral votes. This campaign was characterized by a revolt in the Democratic party and a fusion of that party with the Populist.

The great event of this administration was the war successfully waged by the United States against Spain, in 1898; the freeing of Cuba from Spanish dominion; the acquisition by the United States, as a result of the war, of Porto Rico, the Philippine Islands, and Guam, and, by treaty, of Hawaii and the Samoan island of Tutuila; and the growth of the anti-expansion sentiment.

In the presidential campaign of 1900 there were eight tickets in the field: Republican, William McKinley and Theodore Roosevelt; Democratic, William J. Bryan and Adlai E. Stevenson; Prohibition, John G. Woolley and Henry B. Metcalf; Middle-of-the-Road or Anti-Fusion Peoples', Wharton Barker and Ignatius Donnelly; Social Democratic, Eugene V. Debs and Job Harriman; Social Labor, Joseph F. Malloney and Valentine Remmel; United Christian, J. F. R. Leonard and John G. Woolley; and Union Reform, Seth H. Ellis and Samuel T. Nicholas. The Republican candidates were elected with a majority of 849,790 votes. On Sept. 6, 1901, while attending the Pan-American Exposition in Buffalo, N. Y., President McKinley was shot twice by Leon Czolgosz, an anarchist, and died from his injuries on the 14th. Immediately thereafter Vice-President Roosevelt took the oath of office as President.

In the presidential campaign of 1904 there were six tickets in the field, viz: the Republican, bearing the names of Theodore Roosevelt and Charles W. Fairbanks; the Democratic, headed by Alton B. Parker and Henry G. Davis; the Socialist, with Eugene V. Debs and Benjamin Hanford; the Prohibition, with Silas C. Swallow and George W. Carroll; the Populist, with Thomas E. Watson and Thomas H. Tibbles; and the Social Labor, with Charles H. Corrigan and William W. Cox. The Republican candidates were elected by a popular plurality of 2,545,515 votes and an electoral majority of 226 The most conspicuous features of President Roosevelt's seven-year administration were his persistent warfare on trusts and illegal combinations, his efforts to conserve the natural resources of the country, and

his successful measures to bring about a termination of the Russo-Japanese war, for which he was awarded the Nobel Peace Prize.

In the campaign of 1908 there were seven tickets in the field, viz: the Republican, headed by William H. Taft and James S. Sherman; the Democratic, by William J. Bryan (third time) and John W. Kern; the Socialist, by Eugene V. Debs (third time) and Benjamin Hanford; the Prohibition, by Eugene W. Chaffin and Aaron S. Watkins; the Populist, by Thomas E. Watson and Samuel Williams; the Social Labor, by August Gillhaus and Donald L. Munro; and the Independent, by Thomas L. Hisgen and John T. Graves. The Republican candidates again won, this time by a popular plurality of 1,269,804 votes and an electoral majority of 159.

The early part of President Taft's administration was marked by a rising storm of insurgency in his party in Congress, aided by alleged arbitrary acts by the Speaker of the House of Representatives. The disaffection spread rapidly and widely, and culminated in the various State ections in 1910 in changing the party strength in the House of Representatives from a Republican majority of 47 to a Democratic majority of 66, and in reducing the Republican majority of 28 to 10 in the Senate — all in the 62d Congress (1911–1913).

In January, 1911, the State Department announced that a complete agreement had been reached on the long-pending fisheries question between Canada, Newfoundland, and the United States, which would render it unnecessary to submit the controversy to The Hague Court of Arbitration. In the same month the chairman of the House Committee on the Census introduced the customary bill for the reapportionment of the House of Representatives based on the census of 1910, increasing the membership of the House from 391 (under the census of 1900) to 433, and fixing the new ratio of representation at 1 to 211,800, instead of 1 to 194,182. In the same month also a reciprocity agreement between the United States and Canada was negotiated at Washington and sent simultaneouly to the America Congress and the Canadian Parliament for ratification. This measure was regarded as the most important one of an international character that had been brought to the debating stage in many years. As soon as its terms became known it drew forth heated arguments pro and con in the United States, Canada, and Great Britain, British alarmists predicted that the measure, if ratified, would lead to the eventual annexation of Canada by the United States, an opinion that President Taft promptly repudicated, declaring that commercial reciprocity only was sought. In the United States there was a widespread feeling, especially in agricultural sections, that the agreement would work a hardship for the farmer in cheapening all farm products. Public opinion, however, as concentrated in the British and Canadian Parliaments and the United States House of Representatives, early took a favorable view of the measure. The former practically went on record as favoring the agreement by a vote of 324 to 222 (Feb. 9); in the Canadian Parliament a motion to delay consideration was defeated and the Minister of Finance announced that the agreement would be ratified (the same day); and the United States House of Representatives ratified it by a vote of 221 to 92 (Feb. 14).

Another measure that elicited much comment in official international circles early in 1911 was the projected fortification of the entrances to the Panama Canal. In the United States it was claimed that fortifications were necessary for the safe-guarding of a property that had cost so many millions. On the other hand it was urged in foreign countries that the canal should be thoroughly neutralized.

On Feb. 21, President Taft sent to the Senate a new treaty with Japan, from which the obnoxious immigration clause had been eliminated, and the Senate ratified it on the 24th. On the 23d of the same month the Interstate Commerce Commission decided against the railroads in the freight rate cases.

In the presidential campaign of 1912 there were six tickets in the field, viz.: the Republican, bearing the names of William H. Taft, James S. Sherman, and Herbert S. Hadley (the latter substituted for Vice-President Sherman who died five days before the election); the Democratic, by Woodrow Wilson and Thomas R. Marshall; the Progressive (see PROGRESSIVE PARTY, THE), by Theodore Roosevelt and Hiram W. Johnson; the Socialist, by Eugene V. Debs (fourth time) and Emil Seidel; the Prohibition, by Eugene W. Chafin (second time) and Aaron S. Watkins; and the Social Labor, by Arthur E. Reimer and August Gillhaus. For the first time since 1892 the Democratic candidates won, receiving 6,293,454 popular and 435 electoral votes, and having a plurality of 2,173,916 votes. The Republican candidates received 3,484,980 popular and 8 electoral votes; the Progressive candidates, 4,119,538 popular and 88 electoral votes; and the Socialists 900,672 popular votes.

The most conspicuous feature of the early months of President Wilson's administration was the legislation concerning business—tariff reform and a radical change in the national banking and currency system. The President had sounded the keynote of the Democratic policy in the following assurance to the business men of the country immediately after his election:

"No man whose business is conducted without violation of the rights of free competition and without such private understandings and secret alliances as violate the principles of our law and the policy of all wholesome commerce and enterprise need fear either interference or embarrassment from the administration."

As the Democratic party's platform had given pledges of tariff and banking reform, the President called the Congress to a special session to carry out these pledges. This session extended continuously from April 8, 1913, to Dec. 2 following, in itself an extraordinary feature of national legislation that was further made memorable by the fact that for the first time in 112 years a President delivered his message orally at the convening of both Houses in joint session.

The first of the promised reform measures, the "downward revision" tariff bill, bearing the names of Representative Oscar W. Underwood (Ala.), chairman of the House Committee on Ways and Means, and Senator Furnifold M. Simmons (N. C.), chairman of the Senate Committee on Finance, was introduced in the House, April 7; passed May 8; referred to the Finance Committee of the Senate, May 16; passed in Senate, Sept. 9; conference report on it adopted in the House, Sept. 30, and in the Senate, Oct. 2; and the bill became law by the Presidential approval Oct. 3. On the final passage of the bill President Wilson said:

"We have set the business of this country free from those conditions which have made monopoly not only possible, but in a sense easy and natural."

The new tariff provided for a reduction of nearly one-half on the average tariffs on foodstuffs and farm products, one-third the average on cotton clothing, earthenware and glassware, and nearly two-thirds on woolen clothing; a reduction of the sugar tariff and its entire abolition in 1916; the abolition of all tariff on meats, fish, dairy products, flour, potatoes, coal, iron ore, lumber, and many classes of farm and office machinery; and a general reduction on all important articles in general use.

A comparison of the revenue from all import rates under the former tariff act with the estimated revenue under the new act showed: Total, old, $305,000,000; new, $249,000,000; from corporation and income taxes, old, $37,000,000; new, $122,000,000; average percentage of rates compared with the value of all imported merchandise, old, 37; new, 27; and the value of annual imports added by the new act to the free list, $147,000,000.

The second of the promised reform measures, the Banking and Currency bill, bearing the names of Representative Carter Glass (Va.) and Senator Robert L. Owen (Okl.), chairmen of House and Senate Committees on Banking and Currency respectively, became law by the Presidential approval Dec. 23, 1913.

This bill created more general interest throughout the country than the

tariff act, for a very large portion of the people had become possessed of the belief that it represented a direct contest of the alleged money trust, and its innumerable and widely scattered affiliations, with the National government. In the long and tedious movement of the bill through the two committees of Congress, it is deserving of note that the committees called to their aid the most eminent authorities on banking and finance in the country. It is further to be noted that, while many influential bankers vigorously decried various provisions of the bill while it was under discussion in Congress, between the day of its approval and the end of the year over 750 banking institutions applied for admission into the new system.

After signing the bill the President said:

"What we are proceeding to do now is to organize our peace, is to make our prosperity not only stable, but free to have an unimpeded momentum," and "Business men of all sorts are showing their willingness to come into this arrangement which I venture to characterize as the Constitution of Peace."

The salient features of the bill as adopted included the following: Authorizes at least eight (maybe twelve) regional reserve associations, each with a regional or central bank; constitutes the Secretary of the Treasury, the Secretary of Agriculture, and the Comptroller of the Currency, an organization commission to determine the boundaries of districts and the reserve cities; places the entire banking system under the control of a Federal Reserve Board of seven members, the Secretary of the Treasury and the Comptroller of the Currency, *ex-officio*, and five others appointed by the President. National banks must signify their intention to join the association within sixty days, or they cannot act as reserve agents thereafter, and they must enter within a year or forfeit their charters. State banks and trust companies may also enter the association by meeting requirements for Federal inspection. The total capital stock of the regional reserve associations is fixed at $106,000,000, or six per cent. of the combined capital and surplus of all national banks. Regional bank stock is open for subscription to the National banks first and then to the public, and dividends thereon are to be at the rate of six per cent.

The advantages claimed for the new system over the old included in brief: It will provide an expansive or elastic currency, promoted by the ready mobilization of reserves; will render panics impossible; permits after two years the gradual retirement of National bank notes and the refunding of the two per cent. government bonds; substitutes three per cent. gold bonds without circulation privileges, to run twenty years, or three per cent. Treasury gold notes for one year, renewable annually for thirty years; authorizes the government through the Federal reserve banks to issue notes against collateral approved by the Federal Reserve Board redeemable at the Treasury in gold and at regional banks in gold or other lawful money as the banks may wish; requires gold reserves of forty per cent. in the Treasury Department against outstanding reserve notes; and provides for the imposition of a tax against a depletion of reserves. Every regional reserve bank will be managed by nine directors, three chosen by the Federal Reserve Board, and six elected by the bank, three of whom shall not be bankers. The provisions of the Aldrich-Vreeland Emergency Currency Act, with a modification of the high tax on emergency notes issued under the law, was extended to July 1, 1915.

To facilitate the task of the organization commission in determining the boundaries of the proposed districts and the location of the Federal reserve banks, the commission began, on Jan. 5, 1914, a personal inquiry at a number of the largest cities on the following points: (1) Geographical convenience, which involves transportation facilities and rapid and easy communication with all parts of the district. (2) Industrial and commercial development and needs of each section, which involves consideration of the general movement of commodities and of business transactions within the districts and the transfer of funds and exchanges of credits arising therefrom. (3) The established custom and trend of business, as de-

veloped by the present system of bank reserves and checking accounts.

Under the Act the Federal Reserve Board divided the country into 12 Federal Reserve Districts, with a central reserve city in each. These Districts and cities are as follows:

1.—Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island; central city, Boston.

2.—New York; central city, New York.

3.—New Jersey, Delaware, and the E. part of Pennsylvania; central city, Philadelphia.

4.—Ohio, W. Pennsylvania, and E. Kentucky; central city, Cleveland.

5.—Maryland, Virginia, North Carolina, South Carolina, and N. W. West Virginia; central city, Richmond.

6.—Alabama, Georgia, Florida, E. Mississippi, S. E. Louisiana, and E. Tennessee; central city, Atlanta.

7.—Iowa, S. Wisconsin, S. Michigan, N. Illinois, and N. Indiana; central city, Chicago.

8.—Arkansas, E. Missouri, S. Illinois, S. Indiana, W. Kentucky, W. Tennessee, and N. Mississippi; central city, St. Louis.

9.—Montana, North Dakota, South Dakota, Minnesota, N. Wisconsin, and N. Michigan; central city, Minneapolis.

10.—Kansas, Nebraska, Colorado, Wyoming, W. Missouri, N. Oklahoma, and N. New Mexico; central city, Kansas City, Mo.

11.—Texas, S. New Mexico, S. Oklahoma, W. Louisiana, and S. E. Arizona; central city, Dallas.

12.—California, Washington, Oregon, Idaho, Nevada, Utah, and N. W. Arizona; central city, San Francisco.

In furtherance of his policy to aid sound and lawful business, it was stated at the end of December, 1913, that President Wilson's programme included (1) the encouragement of readjustments of large corporations through arrangements with the Federal Department of Justice and without recourse to the courts; (2) conciliatory overtures by the Federal attorney-general to concerns liable to prosecution by the government on charges of monopolizing trade or interfering with competition in interstate commerce; (3) supplemental legislation to the Sherman law; (4) specific definition by Congress of what constitutes a trust, a monopoly, an unreasonable restraint of trade, and interference with free competition, to meet the Supreme Court's decision of "the rule of reason"; (5) personal penalties for the men in control of large interests violating the law; (6) a breaking up of the "community of interest" plan among corporations; (7) abolition of interlocking directorates; (8) criminal prosecution of corporation directors and officers where there has been wilful violation of the law, instead of civil suits for the recovery of nominal damages. The administration's trust programme was based on the assumption that there is ample law in the Sherman act to break up offending corporations, but not sufficient for the punishment of large individual operators who in their private offices pull the wires that manipulate many of the great combinations.

During 1913 two proposed amendments of the Federal Constitution were ratified by the requisite number of States. The first, popularly known as the Income Tax Amendment and officially as ARTICLE XVI., provided that

"The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the States, and without regard to any census or enumeration."

The method of laying and collecting these taxes was provided by the Underwood-Simmons tariff act, already noted. The second amendment, for the direct or popular election of United States Senators, and known officially as ARTICLE XVII., provided that

"The Senate of the United States shall be composed of two Senators from each State, elected by the people thereof for six years, and each Senator shall have one vote. The electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State legislatures.

"When vacancies happen in the representation of any State in the Senate the executive authority of such

State shall issue writs of election to fill such vacancies, provided that the legislature of any State may empower the executive thereof to make temporary appointments until the people fill the vacancies by election as the legislature may direct.

"This amendment shall not be so construed as to affect the election or term of any Senator chosen before it becomes valid as part of the Constitution."

Early in 1913 the legislature of California passed a bill to regulate by restriction the ownership of land within the State by aliens. While the bill was under discussion, the Japanese government lodged at Washington a protest against its passage on the ground that it discriminated against Japanese residents in California and that its enactment would violate the treaty between Japan and the United States. The people of California declared that the bill applied to all aliens and was not intentionally anti-Japanese. President Wilson endeavored to secure at least a modification of the bill, and sent Secretary Bryan to confer with the State authorities on it. The Californians remained firm, the Japanese continued to protest, and war with Japan became a suggested possibility. Despite all protests and outside influences the bill was passed, Governor Johnson signed it, May 19, and it became effective, Aug. 10, following. Officially it was stated that the object of the law was to prevent an increase in the amount of alien holdings and gradually to break up the existing alien colonies, that individuals then holding land might continue to do so during their natural lives, and that corporations formed before the law became effective might hold land for a period of fifty years. The anti-Japanese contention was that the white farmers could not compete with the Japanese, that the Japanese were acquiring the best farming lands in the State, and that they already controlled ninety per cent. of its agriculture.

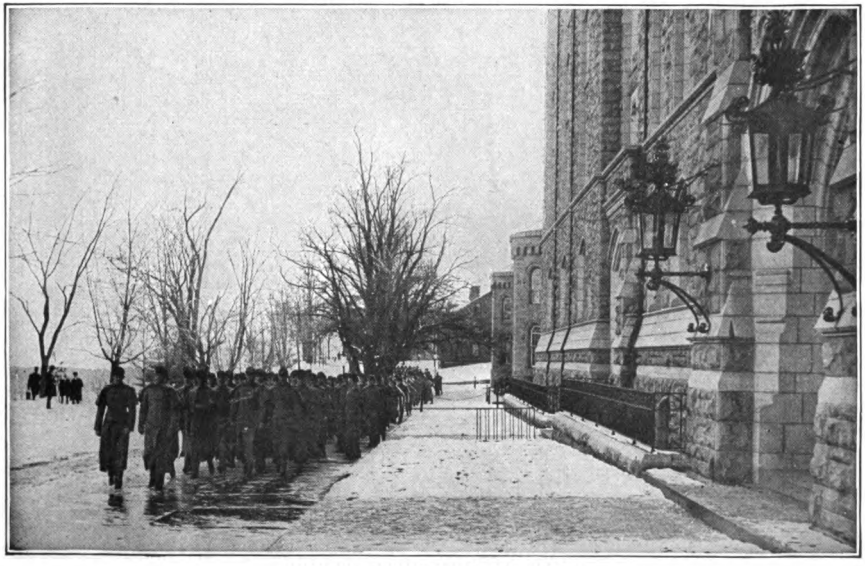
The most serious of international complications, and one that remained unsettled at the beginning of 1914, was that growing out of the protracted revolution in Mexico. Following the virtual deposition of Porfirio Diaz, who had been President since 1877, in 1911, Francisco de la Barra was inaugurated as Provisional President. Francisco I. Madero, Jr., who had been leading a revolution and had assumed the Provisional Presidency, resigned his title and pledged loyalty to de la Barra. On Sept. 20, 1911, Madero was elected Constitutional President. Gen. Felix Diaz, a nephew of the exiled former President, started another revolt, and soon other "leaders" did the same. President Madero, however, succeeded in holding out against the revolutionists till Feb. 23, 1913, when, with Vice-President Suarez, he was assassinated in Mexico City. Gen. Victoriana Huerta then assumed the Provisional Presidency, and undertook a spirited campaign against the revolutionary factions.

In the Presidential campaign of 1916 there were five tickets in the field, viz.: the Democratic, bearing the renomination of Woodrow Wilson; the Republican, headed by Charles E. Hughes, who resigned his office as an Associate Justice of the U. S. Supreme Court on receiving the nomination; the Prohibition, headed by J. Frank Hanly; the Socialist, headed by Allan J. Benson; and the Socialist Labor, headed by Arthur E. Reimer. The balloting showed the following results: Wilson, 9,172,561 popular and 277 electoral votes; Hughes, 8,537,684 popular and 254 electoral votes; Benson, 568,377 popular votes; Hanly, 200,475; and Reimer, 11,472. President Wilson reappointed his Cabinet as constituted during the latter part of his first administration.

The opening of the World War brought extraordinary responsibilities and cares to the Government. Pernicious activities broke out in various sections. The President promptly declared the neutrality of the United States, and warned all persons against violating it. The massacre of the "Lusitania" aroused the deepest indignation against the German Government; alien conspiracies developed almost daily; the country seemed to be overrun with plotters against its neutrality and integrity; and, at length, unable to longer bear the indignities directed against the country, Congress on April 6, 1917, solemnly declared

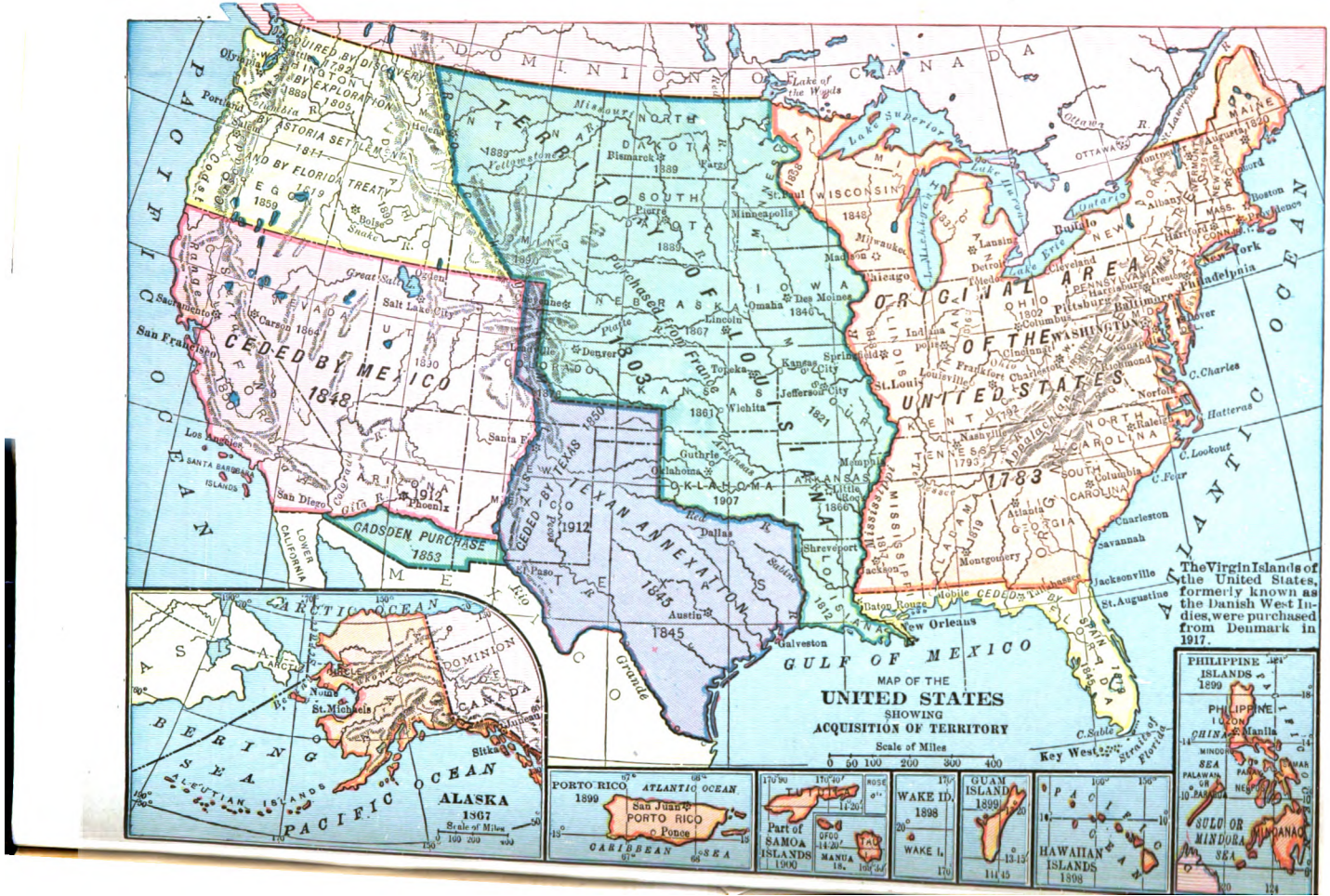


MAIN BUILDING



WINTER SCENE AT WEST POINT

WEST POINT MILITARY ACADEMY


ACQUIRED BY DISCOVERY
1792
BY EXPLORATION
1805
BY ASTORIA SETTLEMENT
1811
AND BY FLORIDA TREATY
1819
1846
1859
CEDED BY MEXICO
1848
1912
GADSDEN PURCHASE
1853
TEXAS
1845
TEXAN ANNEXATION
1845
CEDED BY TEXAS
1850
1912
1803
Purchased from France
LOUISIANA
1812
1783
ORIGINAL AREA OF THE UNITED STATES
1783
1889
1889
1889
1889
1890
1907
1912
1912
1867
1899
1899
1900
1898
1898
1898
1899
1917
DOMINION OF CANADA
Lake of the Woods
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
OTTAWA
Ottawa R.
St. Lawrence R.
Missouri R.
Mississippi R.
Ohio R.
Red R.
Rio Grande
Colorado R.
Columbia R.
Snake R.
Platte R.
Arkansas R.
Great Salt Lake
Salt Lake City
Yellowstone R.
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
Caribbean Sea
Bering Sea
Arctic Ocean
Aleutian Islands
Hawaiian Islands
Philippine Islands
Sulu or Mindoro Sea
Portland
Seattle
Olympia
Boise
Helena
Bismarck
Pierre
Minneapolis
St. Paul
Milwaukee
Madison
Chicago
Detroit
Lansing
Buffalo
Albany
Boston
Montpelier
Concord
Augusta
Hartford
New York
Philadelphia
Baltimore
Washington
Richmond
Norfolk
Raleigh
Columbia
Atlanta
Charleston
Savannah
Jacksonville
St. Augustine
Key West
Mobile
New Orleans
Baton Rouge
Jackson
Montgomery
Nashville
Louisville
Cincinnati
Indianapolis
Columbus
Pittsburg
Cleveland
Harrisburg
Frankfort
Charleston
Omaha
Des Moines
Lincoln
Kansas City
Springfield
St. Louis
Jefferson City
Topeka
Denver
Wichita
Oklahoma
Guthrie
Little Rock
Memphis
Shreveport
Dallas
Galveston
Austin
Houston
Santa Fe
Phoenix
Los Angeles
San Francisco
San Diego
Sacramento
Carson
Reno
Nevada
Utah
Arizona
New Mexico
Colorado
Nebraska
Kansas
Iowa
Minnesota
Dakota
Wyoming
Montana
Idaho
Oregon
California
Lower California
Santa Barbara Islands
Mexico
Sitka
Nulato
St. Michaels
Kotzebue
Dominion of Canada
Alaska
1867
Scale of Miles
0 100 200 300
Scale of Miles
0 50 100 200 300 400
MAP OF THE
UNITED STATES
SHOWING
ACQUISITION OF TERRITORY
Porto Rico
1899
San Juan
Ponce
Part of Samoa Islands
1900
Tutuila
Manua
Rose
Wake Id.
1898
Wake I.
Guam Island
1899
Hawaiian Islands
1898
Philippine Islands
1899
Luzon
Manila
China
Palawan
Negros
Panay
Mindoro
Sulu Sea
Borneo
Celebes
C. Charles
C. Lookout
C. Fear
Hatteras
C. Sable
Straits of Florida
The Virgin Islands of the United States, formerly known as the Danish West Indies, were purchased from Denmark in 1917.

that a state of war existed between the United States and the Imperial German Government.

The progress of events during 1916, 1917, 1918, 1919, are covered in the appendix, showing both America's participation in the World War and world events as affecting other nations.

The chief events of 1920 were the taking of the decennial census and the presidential elections. The Republican party placed in nomination Warren G. Harding, of Ohio; the Democratic party, James M. Cox, of Ohio. Mr. Harding was elected by 404 electoral votes to 127 for Mr. Cox. The chief event of the short administration of President Harding was the conference on the Limitation of Armaments in 1921-22. The enforcement of the new prohibition laws, pursuant to the enactment of the 18th Constitutional Amendment, prohibiting the use and sale of intoxicating liquors, was one of the problems confronting the new administration.

Mr. Harding died Aug. 2, 1923, and was succeeded in office by Vice-President Calvin Coolidge. The investigation of Secretary of Interior A. B. Fall, and his connection with the leasing of oil lands, caused a political scandal of wide magnitude in Washington during 1923 and 1924. The battle to enforce prohibition laws was also a decided feature of public interest. The activities of a secret society known as the Ku Klux Klan had an unexpected influence upon politics. A Federal Bonus Law was enacted in May, 1924, over the President's veto, and became a law. President Coolidge's administration became best known for its demand for conservation in public expenditures and a firm stand for economy in all branches of governmental departments. In his annual message to Congress, Dec. 3, 1924, President Coolidge said: "Our domestic problems are for the most part economic. In my opinion the Government can do more to remedy the economic ills of the people by a system of rigid economy in public expenditures than can be accomplished through any other action." The year 1924 was an election year. President Calvin Coolidge was nominated by the Republican party, and John W. Davis, of West Virginia, by the Democratic party. President Coolidge was re-elected by the electoral vote of 382 to 136 for Mr. Davis. The Progressive party, under Senator La Follette, were able to muster only 13 votes. President Calvin Coolidge and Vice-President Charles G. Dawes were inaugurated March 4, 1925.

The fiscal year 1926-27 showed a Treasury budget surplus of about $630,000,000 and an indicated reduction in the public debt of more than a billion dollars. These items marked the principal features of the administration of Calvin Coolidge. The Republican National Committee, on Dec. 7, 1927, selected Kansas City as the scene of their national convention in June. The Democratic party selected Houston, Texas. At their respective conventions, the parties nominated Herbert Clark Hoover, former Secretary of Commerce, for president and Charles E. Curtis, former senator from Kansas for vice-president; Alfred E. Smith, former governor of New York, for president and Joseph E. Robinson, former senator from Arkansas for vice-president. In the election which took place on Nov. 6, 1928, Herbert Hoover was elected 31st President of the United States and Charles Curtis, vice-president. The number of votes cast was 36,500,000, the greatest popular vote ever cast. The most astonishing feature of the election was the dissolution of the "Solid South." Many of the Southern and Border States gave Mr. Hoover large majorities, the first time a Republican candidate had been supported by the South since the Civil War. The causes for this political revolution were apparent early in the campaign and were divided between the facts that Alfred E. Smith was frankly anti-Prohibition and Roman Catholic.

Prior to Mr. Hoover's inauguration, the Seventieth Congress, in session from Dec. 3, 1928, until Mar. 4, 1929, passed some important legislation. Among these were: an act to provide for the construction of works for the protection and development of the Colorado river basin, for the approval of the Colorado river project and for other projects. This legislation provided for what was known as the Boulder Dam project, a colossal hydroelectric undertaking, the principal feature of

which was the Hoover Dam, contract for the construction of which was awarded on Mar. 11, 1931. The estimated total cost of the entire project was $109,000,000 of which about half was to be provided by the government in materials. Another act was that known as the Jones Act which was an amendment to the national prohibition act making the penalty for infraction a fine not to exceed $10,000 or imprisonment not to exceed five years, or both; an act to divide the eighth judicial circuit of the United States and to create a tenth judicial circuit.

Immediately after his inauguration, President Hoover called a special session of Congress in accordance with a campaign promise, for the purpose of considering congressional solution of agricultural problems and also to effect limited changes in the tariff. Agricultural relief finally took form in the passage of an act appropriating $500,000,000 as a revolving fund to be expended by a Federal Farm Board headed by Alexander Legge, later succeeded by James C. Stone. The purpose of the Federal Farm Board was to stabilize the prices of agricultural products by purchases of surplus stocks in the open national markets and to loan funds to various cooperative associations. On Feb. 10, 1930, the Grain Stabilization Corporation was organized which began purchasing agricultural commodities, principally wheat, in the same month. Purchases continued until in August, 1931, 200,000,000 bushels of wheat were being held in addition to 1,300,000 bales of cotton; these two commodities representing a total investment of $321,900,000. Contrary to expectations, the Farm Board's activities in agricultural markets did not maintain prices, and, in August, 1931, it was reported to have been sustaining a paper loss of $205,365,000, or slightly more than 40 per cent. of the original fund. In addition, carrying charges to the amount of $45,000,000 per year were accumulating on the cotton and wheat held in the above mentioned quantities. On Aug. 31, 1931, the Board abandoned further attempts at stabilization through purchases. The Board also had advanced money on 2,000,000 bales of cotton held by cooperative cotton marketing associations. These loans were made on the basis of 9 cents per pound, and, in August, 1931, the value had shrunk $20,000,000 to $30,000,000 less than the amount advanced. On Oct. 1, 1931, cotton prices reached the lowest point since August, 1899. Loans to the amount of $4,000,000 were authorized for California raisin growers by the Farm Board on Aug. 8, 1931. Confronted with the problem of disposing of its holdings of agricultural products, the Board entered into an agreement with the Brazilian government whereby 25,000,000 bushels of wheat were exchanged for 1,050,000 bags of coffee. This reduced the carrying charge rate on wheat by $4,500,000. On Sept. 4, 1931, the Board announced the sale of about 15,000,000 bushels of wheat to the Chinese government, accepting securities of the Chinese Nationalist government to be paid off in 1934, 1935, and 1936 with interest at 4 per cent. The contract further stated that shipment was to be from United States Pacific ports at the rate of 50,000 tons of wheat or its equivalent in flour, per month, China to incurr all shipping expenses.

From the middle of 1927 until the autumn of 1929, the country was in an unusual state of prosperity with accentuation on stock market speculation by the general public, abnormal increases in credit line and phenomenal expansion in all branches of industry. The spirit of speculation seized the public so strongly that Stock Exchange prices, already up some 80 per cent. between the spring of 1925 and the end of 1927, rose 25 per cent. higher in 1928 and an additional 35 per cent. during the first nine months of 1929. Brokers' loans increased from 1927 to September, 1929, over $5,200,000 or about 150 per cent. The Federal Reserve Board refused to permit its system of credit to be so used and the Stock Exchanges turned to the corporations with their great bank balances. Even these vast sums were not sufficient to allay the unprecedented thirst for speculation and foreign money markets were invaded, English and Continental securities being thrown into the maelstrom. These markets, stripped of their necessary resources and confronted with serious difficulties as a result of American brokers' raids on their available capital were forced to take protective measures of the strongest character. The critical con-

dition into which those markets had been thrown by American withdrawals, had, in fact, been greatly accentuated by several disastrous failures of speculative companies in London. How great these withdrawals were it was impossible to estimate. They were beyond question greatly increased when the American market, in September, 1929, showed signs of a coming collapse, and then Europeans in New York speculation, many of whom had been carrying large lines of speculative shares, began to throw their holdings into American markets in large quantities. Public warnings against overloaned banks and unsound stock prices by responsible banking groups went unheeded by the vast multitude of inexperienced investors and, encouraged by the silence of the national administration and its repeated assurances that stock prices would continue to rise, newly organized investment trusts, which in previous years, had not put out more than a few hundred million dollars worth of stocks or bonds in a year, placed on the market $2,200,000,000 worth during the first nine months of 1929. By the middle of October, 1929, however, the crash came with unprecedented violence, sweeping the Stock Exchanges of the country with panic. Never, in the history of the country, had transactions of a day risen above 8,200,000 shares on the New York Exchange, but on Tuesday, Oct. 29, 1929, 16,410,000 shares were thrown into the market. As the year drew to a close, stock prices dropped precipitately, credit lines were rigidly strictured or withdrawn altogether, industrial expansion ceased, and unemployment set in until it was estimated in the fall of 1931, that nearly 6,000,000 wage earners were without work, and hundreds of thousands of small investors were ruined.

The year 1930 opened with the country plunged into an economic depression that caused widespread suffering and a tremendous falling off of prices for all types of commodities. The steel industry, backbone of American manufactures, operated on an average of 37 per cent. The President called to Washington a group of the leading industrial men in an effort to devise ways and means of providing work for the unemployed and also to exact promises that wages would not be cut so as to maintain the buying power of the consuming public. The laws of economics, however, soon demanded that wages, salaries and other forms of remuneration be reduced and this was done in nearly all lines of industry.

On June 16, 1930, the tariff bill, which the national administration assured the country would correct industrial ills, passed the House having been put through the Senate the day previous, and was immediately signed, although admittedly not in accordance with the ideas Mr. Hoover had expressed in his recommendations. The new schedule was computed to have 1,253 amendments and the rates represented the highest in the history of the country on some commodities, including farm products. Its passage was the signal for reciprocal tariff rates set up by many foreign countries to which the United States was a large exporter. Outstanding among these was Canada, the government at Ottawa, passing what was termed "the most drastic and far-reaching customs revision of the century." Where the Smoot-Hawley tariff provided a "flexible" clause which gave the President power to investigate cases where injustice was claimed as to rates, and a commission to hear complaints and report to the president with recommendations, the Canadian tariff provided for the automatic institution of reciprocal ratings when any country imposed upon Canadian products rates higher than those enumerated in the Canadian schedule. The effect of the tariff upon already suffering national business was the subject of dispute but the Department of Commerce, on Jan. 17, 1931, published figures concerning international business conducted by the United States in the year 1930 which showed that a loss on imports and exports of $2,737,780,000 was sustained.

Other important pieces of legislation passed by the Seventy-first Congress were: a joint resolution for relief of farmers in areas stricken by storm, flood or drought in the south, southwest and Mississippi Valley—such relief to be by means of advance loans on crops of 1930, for which an appropriation of $7,000,000 was made available; an act to transfer to the attorney-general certain functions in the administration of the national

prohibition act, to create a bureau of prohibition in the department of justice; an act providing for the reapportionment of representation by States in the House of Representatives determined on the 1930 census; an act providing for a one per cent. income tax reduction for the calendar year 1929; establishment of the Radio Commission on a permanent basis.

The Seventy-first Congress adjourned Mar. 4, 1931, and passed into history as the heaviest spending peacetime Congress ever in session in the history of the country. In its two years' existence, annual appropriations and permanent and indefinite allotments, aggregated the total of $10,249,819,215. As an aid in overcoming the economic depression, Congress appropriated sums totaling $400,000,000 to be used in the construction of public buildings, advances to the Shipping Board, advances to reclamation fund, drought relief, emergency construction items, Federal-aid highways, and an emergency act for rivers, harbors, flood control, national forests and national parks.

In the summer of 1931, President Hoover, suggested a moratorium on all inter-governmental debts arising from the World War from July 1, 1931, to June 30, 1932. On July 6, 1931, at Paris, France, an agreement was signed whereby the payment of such debts would be suspended according to the principles outlined by Mr. Hoover. There were four principal points in the agreement: First, that the payment of all international debts should be suspended from July 1, 1931, until June 30, 1932; second, Germany should pay the amount of the unconditional annuities of the Young Plan but France agreed that the payments made by the Reich would be placed by the Bank for International Settlements in bonds guaranteed by the German railroads; third, all the suspended payments shall bear interest in the conditions suggested by the American government and shall be amortizable in ten annuities from July 1, 1933; fourth, the same conditions to be applicable to the bonds issued by the German railways.

On June 30, 1931, the Federal government ended its fiscal year with a deficit of $900,000,000 and an increase in the public debt of $616,000,000—the most unfavorable year in recent history. The reasons for decline in receipts and increase of expenditures, causing the deficit, were advanced as the business depression, agricultural relief, war veterans' benefits and governmental construction activities respectively. On Aug. 23, 1931, the Wickersham Commission, appointed by President Hoover to investigate law observance and enforcement, closed its program with the delivery of its final report. The result of this Commission's work was contained in over four thousand pages, aggregating about 1,600,000 words, on the subject of its investigations in all of its ramifications. The Commission's report on the subject of the eighteenth amendment to the Constitution, provoked widespread discussion, especially after the President referred it to Congress without approving it.

Universalist Church, a communion holding the doctrine that all men, and also the devil and fallen angels, will be forgiven and will enjoy eternal happiness. This belief is very ancient, and passages implying it may be found in the works of Origen and his followers, Gregory of Nyssa, Chrysostom, etc. It is also said to have constituted part of the creed of the Lollards, Albigenses, and Waldenses. The Universalists ground their reasons for their doctrine in the love of God, who, they say, is only angry with sin, not the sinner, and therefore if the sinner repents even after death his repentance will restore him to God's favor. The sovereignty of God will be finally vindicated by the ultimate harmony of the moral universe, and the submission of all things in heaven and earth to His righteous will. When righteousness is triumphant peace and happiness will prevail; till then pain and suffering will be instruments to work out the will of God. Universalism is better known as a distinct sect in the United States than in England. In 1827 a division arose among the American Universalists concerning punishment after death, some asserting it to be limited, while others denied it altogether. Some separated from the main body and called themselves "The Massachusetts Association of Restoration-

ists." Most of them afterward joined the Free-Will Baptists or the Unitarians, while the others returned to the main body. In 1840 the whole sect divided into two, the Impartialists and the Restorationists. But Universalism is also held by many members of other sects, and practically by all Theists strictly so called. The reports of the Universalist Church in the United States in 1927 showed: Ministers, 500; churches, 628; members, 86,983.

Universal Prime Meridian, in astronomy, the meridian of Greenwich, adopted at an International Conference of scientific men, held at Washington, D. C., in 1883.

Universal Time, in astronomy, a method of reçkoning time for international purposes, agreed on by the International Conference, held at Washington, D. C., in 1883. Universal time is reckoned from mean noon at the Universal Prime Meridian, the day commencing at midnight, and divided into 24 (instead of into two portions of 12) hours each.

Universities, though offering analogies to Greek and Roman schools, trace their historic continuity no further than the 12th, or, at the most, 8th century A. D. Their germs must be sought in the Karoling schools of France, the Palatine, and Italy, and the Saracen schools of Bagdad and Cordova, in such distinctively Professional institutes as Salerno's of medicine, Bologna's of Roman law, and in the Paris lecture rooms of the early schoolmen, Abelard, Roscelin, and William of Champeaux. One science attracts another, and so fresh faculties were added to arts, to medicine, or to law; teaching begets instructors, and these received their stamp of fitness in degree. Through gradual development from within, aided by charters of kings and Popes from without, schools grow into universities — corporations, that is, of teachers and scholars, though later interpreted "places of universal study."

Among the universities and colleges in the United States of which there are more than 500 conferring degrees, the following are the most important: Harvard, Cambridge, Mass., founded 1638; William and Mary, Williamsburg, Va., 1693; Yale, New Haven, Conn., 1700; Princeton, Princeton, N. J., 1746; Columbia, New York city, N. Y., 1754; University of Pennsylvania, Philadelphia, 1785; Brown University, Providence, R. I., 1764; Dartmouth, Hanover, N. H., 1769; Rutgers, New Brunswick, N. J., 1770; Wesleyan, Middletown, Conn., 1830; Johns Hopkins, Baltimore, Md., 1876; Amherst, Amherst, Mass., 1821; Williams, Williamstown, Mass., 1793; University of Michigan, Ann Arbor, 1841; Dickinson, Carlisle, Pa., 1783; Washington and Lee, Lexington, Va., 1749; University of Virginia, Charlottesville, 1825; Cornell University, Ithaca, N. Y., 1868; Union, Schenectady, N. Y., 1795; Bowdoin, Brunswick, Me., 1798; Trinity, Hartford, Conn., 1823; University of California, Oakland, 1855; University of Chicago, Chicago, Ill., 1891; Leland Stanford, Jr., California, 1891; and Vanderbilt, Nashville, Tenn., 1875.

University Extension. The American Society for the Extension of University Teaching was founded at Philadelphia, in June, 1890, and incorporated in March, 1892. The office is in Philadelphia, Pa. The aim of university extension is: (1) To extend higher education to all classes of people. (2) To extend education through the whole of adult life. (3) To extend thorough methods of study to subjects of every-day interest. From Philadelphia the movement has extended into many sections of the country, being established mainly, however, in connection with colleges and universities.

University of the South, an educational institution in Sewanee, Tenn.; founded in 1868 under the auspices of the Protestant Episcopal Church.

University Settlements, houses in the poor districts of cities where educated men and women live and come in contact with the poorer classes for social, educational, and civic purposes. These settlements provide clubs, and offer a home and recreation for poor workers. Children are taken care of and have many amusements, all with a view to waken in them a desire for better things and right living. The first settlement in the United States was founded in New York city Sept. 1, 1889, by the grad-

uates of several women's colleges. The building, at No. 95 Rivington Street, is located in one of the most crowded tenement districts of the East Side. In the same month a settlement called Hull House was opened in Chicago. On May 14, 1891, another settlement was organized in New York by the graduates of Yale, Columbia, Princeton, and other universities. In October of the same year the graduates of Andover Theological Seminary and other ex-collegians began a similar work in the tenement district of Boston. There are settlements, besides those mentioned, in Brooklyn, Buffalo, Jersey City, Hartford, Philadelphia, Cleveland, Cincinnati, Pittsburg, St. Louis, San Francisco, and many other cities; numbering altogether nearly 500. In 1891 the College Settlements Association was formed, with the purpose of uniting all college women and their friends, who were interested in settlement work.

Unleavened Bread, in Church history, bread used in the Roman Church for the celebration of mass and the administration of the Eucharist. The Greeks use leavened bread. In the English Church the rubric directs that the bread "shall be such as is usual to be eaten," and an attempt to revive the use of unleavened bread has been declared illegal.

Unlimited Liability, liability to be called on to pay a proportionate share of the entire losses of an unsuccessful company in which one has shares. Joint-stock banks and insurance companies are generally constituted on this basis, but the widespread ruin brought in certain cases on the shareholders has led to many of them being transformed into limited liability companies in States where this can legally be done.

Upanishads, in Sanskrit literature, a name given to a series of treatises or commentaries on the Vedic hymns, the contents of which are partly ritualistic, partly speculative. They are of different dates, some of them being as old as several centuries B. C.

Upas, a tree common in the forests of Java, and of some of the neighboring islands, and found also in tropical Africa. It is a species of the genus Antiaris (A. toxicaria), natural order Artocarpaceæ. Many exaggerated stories were formerly current concerning the deadly properties of this plant. The upas tree yields "antjar," a poisonous secretion containing strychnine. The smallest wound by an arrow tipped with this poison is fatal.

Upchurch, John Jorden, an American mechanic; born in Franklin co., N. C., March 26, 1822. In 1868 he entered the machine shops of the Atlantic and Great Western railroad at Meadville, Pa. While there he organized the Ancient Order of United Workmen and drew up its first ritual. The lodge was formed with 14 members on Oct. 27, 1868. In 1902 it had spread to every State and Territory of the United States and had 420,000 members. In 34 years of its existence it distributed about $112,044,000 in benefits. "Father" Upchurch, as he was called later, settled in Steelville, Mo., where he died Jan. 18, 1887.

Upfold, George, an American clergyman; born in Sheneley Green, England, May 7, 1796; settled in the United States in 1804; and was graduated at Union College in 1814 and at the College of Physicians and Surgeons, New York city, in 1816. In the following year he began the study of theology and was ordained in the Protestant Episcopal Church in July, 1820; was rector of St. Luke's Church, New York, in 1822–1830; became rector of Trinity Church, Pittsburg, in 1831. He was consecrated first bishop of Indiana in December, 1849. He died in Indianapolis, Ind., Aug. 26, 1872.

Upham, Charles Wentworth, an American author; born in St. John, New Brunswick, May 4, 1802; was graduated at Harvard College in 1821, and at its Divinity School in 1824; was member of Congress in 1853–1855. His publications include: "Lectures on Witchcraft, comprising a History of the Salem Delusion, 1692"; "Life of Sir Henry Vane"; etc. He died in Salem, Mass., June 14, 1875.

Upham, Grace Le Baron, an American author; born in Lowell, Mass., June 22, 1845; was educated in Boston, Mass. In February, 1870, she married Henry Macy Upham. She

became identified with the Daughters of the American Revolution, the Daughters of 1812, the Huguenot's Society of America, the Society of the Mayflower Descendants, the Boston Authors' Society, etc.

Upham, Samuel Foster, an American clergyman; born in Duxbury, Mass., May 19, 1834; was graduated at Wesleyan University in 1856; entered the ministry the same year; spent 25 years in the pastorate in the leading charges of New England; received the degree of D. D. in 1872, and LL. D. in 1889; became Professor of Practical Theology in Drew Seminary in 1880. Died in 1904.

Upham, Warren, an American geologist; born in Amherst, N. H., March 8, 1850; was graduated at Dartmouth College in 1871; served on the geological survey of Minnesota in 1879–1885, and on the United States Geological Survey in 1885–1895. He then became secretary and librarian of the Minnesota Historical Society in St. Paul. His publications include "The Glacial Lake Agassiz"; etc.

Upjohn, Richard, an American architect; born in Shaftesbury, England, Jan. 22, 1802. He removed to the United States in 1829 and settled in New Bedford, Mass. In 1833 he went to Boston and aided in making the designs for the city court house. He removed to New York in 1839 to direct the alterations in Trinity Church, but these were abandoned on a proposal being entertained for the erection of a new edifice. He drew the plans for this edifice, which was completed in 1846 and was then considered the handsomest church structure in conception and detail in the United States. He was also the architect of the Church of the Ascension, the Church of the Holy Communion, and others in New York city, and of the Church of the Pilgrims and Grace Church in Brooklyn. His civic architecture was chiefly that of Italian renaissance, while his domestic buildings include numerous varieties of style. He died in Garrison's, N. Y., Aug. 16, 1878.

Upper Iowa University, a coeducational institution in Fayette, Ia.; founded in 1857 under the auspices of the Methodist Episcopal Church.

Upshur, Abel Parker, an American statesman; born in Northampton co., Va., June 17, 1790. In 1841, he was appointed Secretary of the Navy by President Tyler. Two years later, on the resignation of Daniel Webster, he was appointed Secretary of State. Early in 1844 he was on the United States steamer "Princeton," on the Potomac river, in company with the President and other members of the cabinet, to witness experiments with a large wrought-iron gun which burst, and mortally wounded him together with several others. He died near Washington, D. C., Feb. 28, 1844.

Upshur, John Henry, an American naval officer; born in Northampton co., Va., Dec. 5, 1823; was graduated at the United States Naval Academy in 1848. At the outbreak of the Civil War he was assigned to the South Atlantic blockading squadron, where he remained till 1862, when he was detailed to duty with the North Atlantic fleet, in which capacity he took part in the capture of Fort Fisher in January, 1865. He commanded the New York Navy Yard in 1882–1884, and in the latter year was promoted rear-admiral and ordered to the command of the naval forces of the Pacific; was retired in May, 1885.

Upson, Anson Judd, an American educator; born in Philadelphia, Pa., Nov. 7, 1823; was graduated at Hamilton College in 1843; in 1890 became vice chancellor of the University of the State of New York; and in 1892 chancellor. Died 1902.

Upton, Emory, an American military officer; born in Batavia, N. Y., Aug. 27, 1839; was graduated at the United States Military Academy in May, 1861. He participated in the battle of Bull Run and in the Peninsula Campaign early in 1862. In March, 1865, he was brevetted Major-General, U. S. A., was promoted Lieutenant-Colonel, U. S. A., in July, 1866. He originated a system of military tactics which were adopted by the government in 1867; was superintendent of the United States Military Academy in 1870–1875; and was promoted colonel, U. S. A., in 1880; and was assigned to the 4th artillery in San Francisco, Cal. His publications include: "A New System of Infan-

try Tactics"; "Tactics for Non-Military Bodies"; "The Armies of Asia and Europe"; and "The Military Policy of the United States." He died in San Francisco, Cal., March 14, 1881.

Upton, Jacob Kendrick, statistician and author; born in Wilmot, N. H., Oct. 9, 1837; was educated at the Literary and Scientific Departments of Columbia University, and in 1866 the degree of LL. B. was conferred on him by its Law School. He became connected with the United States Treasury Department, was assistant secretary under Secretaries Sherman, Windom, and Folger. In 1895 he was attached to the United States Life-Saving Service. Died 1902.

Upton, Winslow, an American astronomer; born in Salem, Mass., Oct. 12, 1853; was graduated at Brown University in 1875. In 1883 he was made Professor of Astronomy at Brown University, and became dean there in 1899. He was a member of the United States Eclipse Expedition in 1878 and 1883; and served at the Southern Station of Harvard Observatory in Arequipa, Peru, in 1896-1897; published the "Star Atlas" (1896). He died Jan. 8, 1914.

Uræmia, in pathology, a disease caused by the retention of urea and other noxious substances in the kidneys and bladder, followed by blood poisoning. It is produced by any cause which prevents the periodical excretion of the urine, and is a most dangerous malady.

Urania, in mythology, one of the Muses, daughter of Jupiter and Mnemosyne; she presided over astronomy. She is represented as a virgin; with a crown of stars, draped in garments spangled with stars, holding in her left hand a celestial globe. In astronomy, an asteroid.

Uraninite. See RADIUM.

Uranus, in astronomy, one of the superior planets between Saturn and Neptune. It was not known to the ancients. When Sir William Herschel, after the construction of his great reflecting telescope, was systematically examining with it all the stars above a certain magnitude, he, on March 13, 1781, found in the constellation Gemini a star which he recognized as having a disk which the others had not. He took it for a comet, and other contemporary astronomers held the same view. Some months afterward as its motions were traced, the opinion arose that it was a planet, and in January, 1783, La Place laid before the Academy of Science, at Paris, calculations relating to its elliptic orbit which established beyond a doubt that this opinion was correct. Its diameter is about 31,700 miles — about four times that of the earth, its bulk about 64 times as great; but being of light material its weight is only 15 times as great. It has been reasoned out from analogy rather than proved by actual observation that it rotates, but the time of this rotation is wholly unknown. Its distance from the sun is about 1,800,000,000 miles, and it travels once around the orbit in about 87 years. It receives only about one three-thousandth part of the light and heat from the sun which fall on the earth. It is attended by at least four satellites — Ariel, Umbriel, Titania, and Oberon. Their orbits all lie in the same plane, and are at right angles to the path of the planet itself — a circumstance not known in the case of any other planet.

Urban, the name of eight popes: Urban I., succeeded Calixtus I., in 222, and suffered martyrdom in 230. Urban II. (Odo of Lagny); born in Chatillon Sur-Marne, France, about 1042; succeeded Victor III. in 1088. He caused Guibert, who had been supported as anti-pope under the title of Clement III., to be driven out of Rome; preached the first crusade in 1095, and convoked the councils of Bari, Clermont, and Rome. He died in Rome, July 29, 1099. Urban III., (Herbert Crivelli), archbishop of Milan, was successor of Lucius II., and was elected to the papal chair in 1185. He endeavored to send assistance to the Christians in the East, who were being sorely pressed by Saladin; but his death took place before he could effect his object. He died in France, Oct. 20, 1187. Urban IV., became Pope in succession to Alexander IV., in 1261. He excommunicated Manifred, King of Naples, and offered the crown to Charles, Count of Provence and Anjou, and brother to Louis IX.

of France, which led to the subsequent wars of the Anjous for the possession of Sicily and Naples. He died in Orvieto, Italy, Oct. 2, 1265. Urban V., succeeded Innocent VI. in 1362. He restored the papal seat from Avignon to Rome, founded many churches, and reformed numerous abuses. He died in Avignon, France, Dec. 16, 1370. Urban VI. (Bartholomew Prignano), succeeded Gregory XI., in 1378. The cardinals afterward chose Robert of Geneva, who took the name of Clement VII., and took up his residence in Avignon. Thus was originated the famous "Western Schism," which endured for nearly 50 years. He died in Rome, Oct. 15, 1389. Urban VII. succeeded Sixtus V. in 1590, but died in less than a fortnight afterward, Sept. 28, 1590. Urban VIII. (Maffeo Barberini) born in 1568, ascended the pontifical throne in 1623. He condemned the Jansenists, revised the hymns of the Roman Catholic Church, and was the author of some Latin and Italian poems. Died in Rome, July 29, 1644.

Urda, the Hindustani language, as spoken by the Mohammedan population of India. It is really the Hindu language, which is of the Aryan family, with a number of Persian, Arabic, and Turkish words introduced into it, though the inflections of nouns and verbs remain unaltered. It is now the language most largely used by Europeans in their intercourse with the natives of India. It has a literature, chiefly historic, which arose under the Mogul emperors, commencing with Akbar (1556–1605).

Urim, in Hebrew antiquities, literally, lights; but the Septuagint translators make it apparently a plural of excellence, in which case it would signify light. Used specially in the compound term Urim and Thummim, believed to mean light and perfection. Many conjectures have been hazarded as to their nature, but the subject still remains very obscure. They were to be put "on the breastplate of judgment," and on or over the heart of the high priest when he specially entered into the presence of Jehovah.

Urine, the secretion of the kidneys, the chief fluid excretion of man and of the higher animals. Healthy human urine is a transparent light amber-colored liquid, having a saline taste, a peculiar aromatic odor, an acid reaction, and a density varying from 1.010 to 1.025. The urine contains the liquid portion of useless and noxious residuum left after the assimilation of whatever is useful to the structure.

Ursa Major, in astronomy, the Great Bear, the most conspicuous of the 20 ancient northern constellations, its seven leading stars attracting notice all the more conspicuously that there is a certain absence of visible heavenly bodies in the adjacent parts of the sky. The Semitic conception of the constellation was that it resembled a bier with mourners walking behind, and it has sometimes been called specifically Lazarus' bier, the four stars constituting a four-sided figure being the bier and the other three, Mary, Martha, and Mary Magdalene, the mourners. It is much like a plow, and is often called the Plow, the rectangle constituting its body, and the three projecting stars its handle. To other minds it suggests a vehicle, whence it has been called the Car of David, and sometimes Charles' Wain, or Wagon. The four stars standing together are the wheels, and the three behind are the shaft. Another name is the Dipper. But astronomers cling to the old classical conception of a bear, of which the four stars, Alpha, Beta, Gamma, Delta, Ursæ Majoris, are the hind quarter, and the three the tail. The remaining portions of the animal are marked out by sundry small stars of the third and fourth magnitude.

Ursa Minor, in astronomy, the Little Bear; one of the 20 ancient northern constellations, bounded by Draco, Camelopardalis, Cassiopeia, and Perseus. Its contour is marked out by seven stars. The curvature of the tail is in the contrary direction to that of the Great Bear, and at its tip is a star of the second magnitude, the Pole Star.

Ursinus College, a coeducational institution in Collegeville, Pa.; founded in 1869 under the auspices of the German Reformed Church.

Ursula, St., the heroine of a very curious legend of the Middle Ages,

whose origin may be ascribed to the 12th century, and which runs as follows: Deonatus, King of Britain, had a very beautiful and pious daughter named Ursula. She was sought in marriage by the heathen prince Holofernes. His suit was granted, but under the following conditions — the prince must become a Christian, and wait for three years while the bride-elect went with her companions on a pilgrimage to Rome. The suitor was immediately baptized under the name of Ætherius and Ursula set out with 11 vessels, in each of which there were 1,000 companion virgins. The company crossed the sea and sailed up the Rhine as far as Basel, from thence they proceeded overland to Rome, where they were honorably received by Pope Cyriakus. The pious and gallant pontiff, along with a multitude of dignified ecclesiastics, accompanied his fair guests a great part of the return journey, and according to some accounts even shared in the final destruction that suddenly overtook the band; for as they were about to land at Koln they were set on by a horde of heathen Huns, by whom they were all slaughtered. Ursula was at first reserved as a bride for Etzel, the Hun king, but on her steadfast refusal of the offer she was transfixed by an arrow, and thus she is represented in mediæval art. But the bloody deed was no sooner accomplished than 11,000 celestial warriors appeared, who completely routed the Huns and freed Koln. The citizens buried the unhappy maidens with pious care by the Rhine, held afterward sacred, and there too Clematius, a Greek pilgrim, built a church in their honor.

Ursulines, members of one of those religious orders which resulted from the rise in the Roman Church of the evangelical zeal which was so remarkable a reflex effect of the Reformation. Angela or Angelica Merici (1470–1540), a poor maiden of Desenzano, was their founder. She began in that town, and continued afterward in Brescia, the education of poor children. At the grave of Varallo at Milan, a favorite resort of pilgrims, she was inspired with the determination to found a new religious order, and at the celebration of the mass in the St. Afra Church at Brescia, on Nov. 25, 1535, the order, as a free union without binding vows, was solemnly inaugurated and named in honor of St. Ursula.

Uruguay, a republic of South America; bounded on the N. and N. E. by Brazil, E. and S. E. by the Atlantic Ocean, S. by the Rio de la Plata and W. by the Uruguay, which last-named rivers separate the State from the Argentine Confederation. Uruguay has an extreme length of 350 miles by a breadth of 320; area, 72,153 square miles, pop. (1929) 1,808,286; is divided into 19 Departments, of which six have been formed since 1880; and the chief towns are, Montevideo (the capital), Paysandu, Salto, and Mercedes.

The coast to the N. of Cape Santa Maria is low and sandy, but S. and W. of it, and on the estuary of the Plata, it is more bold and indented, presenting some fine bays and harbors. The most important rivers in the interior are the Rio Negro, with its numerous affluents, and the Arapey, Daiman, Yaguaron, and Sebollati. The greater portion of the surface consists of an elevated plateau, penetrated by many fertile valleys along the S. coast line. The surface of this tableland presents a series of extensive plains, traversed by occasional ranges of hills of no great elevation, the whole being almost destitute of trees. The climate is remarkably mild and salubrious. The minerals are copper, potter's earth, and umber. The soil is generally rich and fertile. Wheat, maize, barley, rice, pulse, flax, hemp, cotton, and sugar are the products. Fruits are produced in abundance.

Among the wild animals are the tapir, deer, ounce, monkey, paca, rabbit, and fox; and large packs of wild dogs roam over the plains. There are also many varieties of birds and water fowl. Vast droves of horses and horned cattle run wild on the pampas, the latter furnishing the jerked and salted beef, tallow, hides, horns, and hair, which constitute the great bulk of the exports of the country. The imports of the republic are principally from the United States and Great Britain. In 1914 there were 1,639 miles of railroad, and 4,850 miles of

telegraph in operation. The national debt, Jan. 1, 1915, was $150,153,340.

The Republic of Uruguay, formerly a part of the Spanish Viceroyalty of Rio de la Plata, and subsequently a province of Brazil, declared its independence Aug. 25, 1825. The legislative authority is vested in a Parliament of 19 Senators and 90 Representatives. The President is elected for four years, and has a Cabinet of seven ministers. The Roman Catholic is the State religion, but there is complete toleration of all other creeds.

Üsküp, Üshküb, or **Skopia,** a town of European Turkey, vilayet of Kossovo, on the Vardar river, 100 miles N. W. of Salonica, with which it is connected by rail. It is the seat of a Roman Catholic Albanian archbishop and of a Bulgarian bishop; is an important trade center and a busy industrial town; and has a mixed population of Turks, Albanians, Servians, Bulgars, and Greeks. In the World War it was occupied by the Bulgars on Oct. 22, 1915, and was retaken by the Servians on the 27th. Pop. about 20,000.

Usury, an excessive or exorbitant interest or premium paid, or stipulated to be paid, for the loan of money. Also the practice of lending money at interest; the practice of taking interest for money lent; specifically, the practice of taking exorbitant or excessive interest for the loan of money; the practice of exacting interest in an exorbitant way from needy or extravagant borrowers. In the ancient world interest was always usurious, as it is in the East at the present day. The Mosaic Law prohibited taking interest from Hebrews.

Utah, a State in the Western Division of the North American Union; bounded by Wyoming, Colorado, Arizona, Nevada, and Idaho; admitted to the Union, Jan. 4, 1898; number of counties, 29; capital, Salt Lake City; area, 82,184 square miles; pop. (1920) 449,396; (1930) 502,582.

The surface of Utah is similar to a basin surrounded by high mountains. The interior has an elevation of 4,000 feet above sea-level, and is crossed in a N. E. and S. W. direction by the Wasatch Mountains with an altitude of 12,000 feet. E. of the Wasatch Mountains are the Uintah, near the Wyoming boundary, and W. are numerous detached hills, ridges, and isolated mountains. Lofty plateaus occupy the S. E. The principal rivers are the Green and Grand, uniting in the S. E. to form the Colorado. Nearly all the others empty into the Great Salt Lake. The Great Salt Lake is about 80 miles in length and has an average width of 40 miles; its waters are salt, and it has no communication with the ocean. Utah contains part of the great cañon of the Colorado.

The rocks are most primitive, of Archæan origin, and showing everywhere evidences of volcanic action. Iron ores, coal, gold, and silver, copper, zinc, salt, asphaltum, and borax form the principal mineral resources.

In 1928, the total value of all mineral products was $97,381,000. There were 211,000 fine ounces of gold produced valued at $4,370,100, 17,749,000 fine ounces of silver valued at $10,383,350, copper 298,375,000 pounds, coal 4,810,000 tons and lead 151,724 short tons.

In 1925 the value of all farm property was estimated to be $250,317,511. In 1929, the principal crops of the state were as follows: Wheat, 6,403,000 bus., oats, 2,436,000 bus., potatoes, 3,330,000 bus., hay, 1,626,000 tons, besides considerable corn, barley and rye. Much attention is also given to the cultivation of fruit trees.

In 1930 the farm animals were estimated: 95,000 horses, 4,000 mules, 100,000 milch cows, 444,000 other cattle, 70,000 swine and 2,507,000 sheep. The wool crop for 1929 amounted to 19,011,000 pounds.

The principal industries were smelting, railroad car production, flour and grist mill work, slaughtering and meat packing, printing and publishing. In 1927 there were reported for this state 556 manufacturing plants, employing 13,585 wage earners, paying $16,689,000 for wages and $120,567,000 for raw materials and yielding products having a combined value of $163,118,000.

In 1928 there were 2,194 miles of steam and 498 miles of electric railroad in the state of Utah.

On Dec. 31, 1929, there were 20 National banks with resources of $68,600,000, demand deposits of $30,592,000 and time deposits of $14,578,000. In the various state banks and trust companies, there were savings deposits amounting to $75,100,000.

In the elementary schools of the state there were, in 1928, 119,017 pupils and 4,032 teachers in average daily attendance.

For the year 1927–1928 the total revenue of the State amounted to $17,179,400, and the expenditures $15,189,487. The State had a bonded debt of $9,660,000 and the assessed value of all property was $701,181,704.

Utah's judicial department consists of a Supreme Court of three judges elected for six years and District Courts in each of the seven districts into which the state is divided. District Court judges are elected for four years and each district may have from one to four.

At Provo City the state maintains a hospital for the insane, at Salt Lake City is the penitentiary and a reform school is at Ogden.

The chief cities are Salt Lake City, the capital; Ogden, Provo and Logan.

The governor of the State is elected for a term of four years and receives a salary of $6,000 per annum. Legislative sessions are held biennially and are limited in length to 60 days each. The Legislature in 1917 had 18 members in the Senate and 46 in the House, each of whom receives $4 per day. There were 2 Representatives in Congress.

The region embracing Utah was acquired from Mexico in 1848, and the Territory was organized in 1850, comprising Utah, Colorado, Wyoming, and Nevada. The Mormons led by Brigham Young settled in Salt Lake valley in 1847, and rapidly occupied the fertile valleys of the Territory, few Gentiles settling there till the extension of railroads made it more easily accessible. At a later period the Gentile population rapidly increased, and vigorously opposed the supremacy of the Mormons, who controlled all government positions. A bill passed by Congress in 1882 disfranchised all polygamists and annulled the act of the Territorial Legislature extending the franchise to women. In 1887 a bill was passed, which confiscated the property of the Mormon Church and the Perpetual Emigration Fund, with the exception of the church buildings and parsonages, and devoted it to the support of public schools in the Territory. The Mormons renounced polygamy in 1890. For a considerable time previously efforts had been made to have Utah admitted into the Union; but this was not acceptable to Congress till after the abolition of polygamy. On Jan. 4, 1896, it became the 45th State.

Utahs, or **Utes,** a tribe of American Indians of the Shoshone family, living in Utah and California.

Uterus, in comparative anatomy a dilation in the walls of the oviduct for the preservation or development of the ova. In human anatomy, a hollow, muscular organ, with very thick walls, situated in the pelvic cavity, between the rectum and the bladder. Its chief function is to receive the ovum from the Fallopian tubes, and to retain and support it during the development of the fœtus.

Utica, city and capital of Oneida county, N. Y.; on the Mohawk river, Erie canal, and Lackawanna and other railroads; 95 miles N. W. of Albany; is the center of a large dairying, hop-growing, and cheese-making section; manufactures cotton and woolen goods, clothing, farm implements, boots and shoes, furnaces, and foundry products; is popularly known as the "City of Charities;" and is the seat of the largest insane asylum in the State, Masonic Home, Federal Building, several high-grade schools, and numerous hospitals. Pop. (1920) 94,156; (1930) 101,740.

Utica, an ancient city of North Africa; 20 miles N. W. of Carthage; originally founded as a Phœnician colony in 1101 B. C. Its ruins include an amphitheater, an aqueduct, and the remains of quays; for a bay then carried the sea (now nearly 10 miles distant) to the site.

Utilitarianism, that theory of life which represents happiness as the only ultimate end to be desired and sought after — not necessarily the happiness of the individual, but that of the human race as a totality.

Utopia, the name given by Sir Thomas More to the imaginary is-

land which he makes the scene of his famous political romance " The Ideal Republic, which is the New Island of Utopia." More represents this island as having been discovered by Raphael Hythloday, a companion of Amerigo Vespucci, but it of course is England, the capital Amaurote, London. Its laws and institutions are represented as described in one afternoon's talk at Antwerp, occupying the whole of the second book, to which, indeed, the first serves but as a framework. More's romance, or rather satire, obtained a wide popularity, and supplied (though incorrectly enough) the epithet Utopian to all impracticable schemes for the improvement of society.

Utraquists. See CALIXTINES.

Utrecht, an important town of Holland, capital of a province of the same name, 23 miles south-east of Amsterdam. It is pleasantly situated on the Old Rhine, is traversed by two canals crossed by numerous stone bridges, and is surrounded by strong forts. The town is well built, and has several squares, promenades, a government house, a Protestan' cathedral (a fine Gothic building), mint, handsome town-hall, palace of justice, etc. Educational establishments include a well-equipped university, a veterinary school, musical college, and schools for drawing and architecture. Utrecht is the central point of the Dutch railway system, and carries on an extensive trade in grain and cattle, and in the manufactures of the place, which include Utrecht velvet, carpets, floor-cloth, cottons, linens, chemicals, etc. Utrecht is the oldest town of Holland, and was called by the Romans Trajectum ad Rhenum, that is, " Ford of the Rhine," later Ultra-trajectum. Pop. (1922) 146,441. The province of Utrecht has an area of 525 square miles, with a pop. (1922) 341,793. It is generally flat, is well watered by the Rhine, Vecht, Amstel, etc., and is better suited for dairy-farming and stock-rearing than for corn-growing.

Utrecht, Peace of, a series of separate treaties agreed on at Utrecht, in Holland, by the powers which had been engaged in the war of the Spanish Succession. On April 11, 1713, the States-General, Prussia, Portugal, and Savoy, signed separate treaties with France. The emperor refused to accede to the peace, and his differences with France were subsequently adjusted by the treaties of Rastadt and Baden in 1714. By the treaty with England, France, among other things, recognized the Hanoverian succession, engaged never to unite the crowns of France and Spain, and ceded to England Nova Scotia, Newfoundland, St. Kitt's and Hudson Bay and Straits. Gibraltar and Minorca were also ceded on behalf of Spain. Holland retained the Spanish Netherlands till a barrier treaty was arranged with Austria. Louis XIV. recognized the title of the King of Prussia, who received a part of Spanish Guelderland, and the sovereignty of Neufchatel in Switzerland, while renouncing the principality of Orange. Savoy and Nice were restored to the Duke of Savoy, who was recognized as presumptive heir to the Spanish monarchy, and received the title of king. Philip V. was not recognized till the conclusion of these treaties, but France treated for Spain, and formal treaties corresponding with those with France were afterward signed with that power.

Utrera, a town of Spain, province of Seville, 18 miles S. E. of the city of Seville. It has a fine Gothic church and a Moorish palace. Pop. 17,600.

Uxmal, an ancient Indian town of Yucatan, Central America, about 35 miles S. W. of Merida. It is now an extensive group of ruins.

Uz, in the Old Testament, a region probably lying to the east or south-east of Palestine, known as the scene of the story of Job.



V, the 22d letter, and the 15th consonant of the English alphabet. It represents a labial or labiodental consonant sound, and is produced by the junction of the lower lip and upper teeth, as in ov, eve, vain. The sound of v differs from that of f, which is produced in the same way, in being voiced, while that of f is breathed. Both v and f are also continuous consonants, and also belong to the class of the spirants.

V as a symbol is used: (1) As a numeral: For 5, and with a dash over it for 5,000. (2) In chemistry: For the element vanadium. (3) In heraldry: For vert, in the tricking of arms with a pen and ink. (4) In law: For versus (Latin = against); as, John Doe v. Richard Roe. (5) In physics: For velocity or volume. (6) In music: As an abbreviation of violino, violini, voce, volta, etc. (7) In mathematics: For the vector part of a quaternion. (8) In electrics: As a symbol for volt.

Vaccination, the act or art of vaccinating; the introduction of vaccine matter into the human frame with the view of protecting it against smallpox, or rendering that disease less formidable. When vaccine lymph is introduced into the arm of an infant, by one or more punctures of a lancet, no noticeable effect is discernible for two days. Then a slight papula arises, which, on the 5th or 6th day, becomes of a bluish color and vesicular, with a raised head and a central cup. On the 8th day it reaches full development, and an inflammatory areola appears, which spreads with the extension of the vesicle for two more days. Then a crust or scale is produced in the center of the vesicle, and gradually extends till it covers it in every part. On the 14th or 15th day the scale becomes hard and brown; it next contracts, dries, and blackens, till, between the 20th and the 25th day, it falls off, leaving a permanent circular, depressed, and foveated cicatrix.

In most of the cities and towns of the United States civic ordinances require the vaccination of children before their admission to the public schools.

Vacuum, in physics, a portion of space void of matter. The experimental philosopher is obliged to recognize the practical impossibility of obtaining a perfect vacuum. The so-called Torricellian vacuum, which exists above the mercury column of a barometer, is really filled with mercury vapor probably mixed with a small percentage of air. The very action by means of which the air pump produces its vacuum shows that there can never be an absolute void — a little air always remaining behind.

Vacuum Tubes, glass tubes in which a vacuum has been made and which have then been hermetically sealed, and into the opposite extremities of which platinum wires have been soldered, with an arrangement at the free ends of these whereby they may be connected with the secondary wires of an induction coil, or may, generally, be put into the circuit of an electric current. The object of this arrangement ("Geissler's tubes") is to pass a high-pressure current of electricity through the so-called vacuum, which is in reality a highly rarefied quantity of the particular gas (air, oxygen, nitrogen, etc.) with which the

tube had been filled prior to exhaustion.

Vail, Alfred, an American inventor; born in Morristown, N. J., Sept. 25, 1807; was graduated at the University of the City of New York in 1836, and in 1837 became associated with Samuel F. B. Morse in his experiments for the purpose of perfecting a scheme of telegraphy. His mechanical knowledge applied to the experimental apparatus resulted in the first available Morse machine. He invented the combination of the horizontal-lever motion to actuate the style; devised the alphabet of dots, spaces, and dashes which it necessitated; and in 1844, constructed the automatic lever and grooved roller which embossed on paper the characters which he originated. He was appointed assistant superintendent of the telegraph line constructed between Baltimore and Washington in 1843, and on the completion of the system, in 1844, was stationed at Baltimore, where he invented the finger key and received the first message from Washington. He died in Morristown, N. J., Jan. 18, 1859. Much of the credit that went to Morse belonged to Vail. Died, 1920.

Valencia, a seaport of Spain, formerly capital of the kingdom, and now of the province of the same name; on the shores of the Mediterranean; 3 miles from the mouth of the Guadalaviar and 200 miles S. W. of Barcelona. Silk spinning and weaving are extensively carried on; there are also manufactures of cloths, hats, glass, linen, leather, cigars, and Valencia tiles for flooring. Pop. (1927 Est.) 267,346.

Valencia, the capital and most important city of Carabobo, Venezuela; in the Aragua valley, 24 miles S. of Puerto Cabello; altitude 1,824 feet above sea-level. It is the third city of Venezuela in population and importance, and is the trade center of a large section handling sugar, hides, coffee, cocoa, etc. Here are beautiful parks and squares, a National College, a cathedral, etc. In the vicinity are celebrated hot springs. Valencia was established in 1555. After the separation from Colombia the first Venezuelan Congress met here. Pop. (1926) 36,804.

Valenciennes, a fortified city of France; Department of Nord; at the junction of the Rhondelle and the Scheldt. It is noted for its manufactures of lace. It contains a citadel, a fine town hall, a communal college, civil and military hospitals, a library, museum, theater, arsenal, etc. It manufactures batiste, linens, lawns, printed muslins, lace, beet sugar, gold and silver tissues, toys and leather. It also has foundries, rolling-mills, distilleries, glass works and dye works. It was taken in 1793 by the English and Austrians after a siege of six weeks. It was the birthplace of Froissart, Watteau, and Pujol. Pop.• (1921) 35,600.

Valentine, St., a saint of the Roman calendar, said to have been beheaded Feb. 14, 306 A. D., at Rome. From the old notion that birds began to couple on that day, arose the custom of young men and women choosing each other as "valentines" for the ensuing year by a species of lottery, and of sending love missives to each other. The name thus became applied to a letter or other missive sent by young persons of either sex to each other on Valentine's day; the printed missive being of an amatory or satirical nature, generally sent by post anonymously. Some valentines are highly ornamental and artistic, while others (commonly called "comic valentines") are caricatures.

Valentine, Edward Virginius, an American sculptor; born in Richmond, Va., Nov. 12, 1838; entered Jouffrey's atelier in Paris; was a pupil under Bouainti in Italy, and Kiss in Germany; and attended the Royal Academy of Arts in Berlin. He was president of the Richmond Art Club and the Valentine museum; one of the executive committee of the Virginia Historical Society; and a member of several patriotic and secret organizations. His works include, a marble entitled "The Blind Girl"; bronze busts of prominent American generals and statesmen, and many ideal figures, etc.

Valentine, Milton, an American theologian; born near Uniontown, Md., Jan. 1, 1825; was graduated at Pennsylvania College, Gettysburg, in 1850; ordained in the Lutheran Church in 1852. In 1868 he was called to the presidency of the Pennsylvania College. He resigned that post in

1884 and became Professor of Systematic Theology and chairman of the faculty at the Lutheran Theological Seminary. He was joint editor of the "Lutheran Quarterly" in 1871-76, 1880–85 and again from 1898. He died Feb. 7, 1906.

Valentini, Philip Johann Joseph, an American archæologist; born in Berlin, Germany, in 1828; studied philology at the Gymnasium of Targau, and later took a course in jurisprudence at the University of Berlin. His work in deciphering pre-Columbian manuscripts and hieroglyphics was so successful that he became one of the most noted of American archæologists. One of his important achievements was the translation of the celebrated Mexican calendar stone. He died in New York city, March 16, 1899.

Valentinian, a Roman emperor (364–375); born of humble family in Cibalis, Pannonia, in A. D. 321. By his capacity and courage he rose rapidly in rank under Constantius and Julian, and on the death of Jovian was chosen as his successor (Feb. 26, 364). He resigned the East to his brother Valens, and himself governed the West with watchful care down to his sudden death at Bregetio, Nov. 17, 375, brought on by a fit of passion.

Valentinians, in Church history, the followers of Valentinus, an Egyptian gnostic, whose sect arose at Rome, then rooted itself deeply in Cyprus, and finally spread throughout a great part of Southern Europe, Western Asia, and Northern Africa. He supposed that in the Pleroma there were 30 male and as many female æons united in wedlock, with four unmarried, these latter being Horus, Christ, the Holy Spirit, and Jesus. The youngest æon, Sophia (Wisdom), brought forth a daughter, Achamoth, whence sprang the Demiurge, who created mankind. This Demiurge, becoming puffed up with pride, aspired to be regarded as the only god, and led many angels into the same error. To repress his insolence, Christ descended, Jesus, one of the highest æons, joining him when he was baptized in Jordan. The Demiurge had him crucified; but before his death, both Jesus the Son of God and the rational soul of Christ had separated, leaving only the sentient soul and the ethereal body to suffer. The Valentinians were divided into the Ptolemaitic, the Secundian, the Heracleonite, the Marcosian, and many other sects.

Valerian, an order of herbs or rarely shrubs belonging to the division of monopetalous dicotyledons having the stamens arising from the petals.



VALERIANA.

The order is distinguished from its congeners by the opposite leaves; small irregular flowers. It contains 12 genera and about 190 species, distributed through Northwestern America, Europe, Northern Africa, and temperate Asia — unknown in Australia, and only one species South African. It has a penetrating odor, and a bitter, acrid, somewhat aromatic taste; when distilled with water it yields a volatile oil and valerianic acid. Cats have a strange liking for the odor, and it exercises a remarkable intoxicating or stimulating power over them; the plant is sometimes called cats' valerian. It is often used to tempt cats to an unhappy fate.

Valkyrjur (more commonly, Valkyries), in Northern mythology, the beautiful "maids of Odin," goddesses of fate allied to the Norns. They numbered either nine or thrice nine, and in three bands went forth on horseback and clad in full armor, through air and water, over the wide world to choose for Odin the Valr or Einherjar ("single champions") worthy of Valhal. At home in Valhal the Valkyrjur were the cupbearers of the Æsir, and the Einherjar.

Vallandigham, Clement Laird, an American politician; born in New Lisbon, O., July 29, 1820; was a member of Congress in 1858–1863, and during the Civil War was a strong friend of the Southern Confederacy. He was arrested in May, 1863, by United States troops, on a charge of uttering disloyal sentiments; was tried by court-martial; and sentenced to confinement till the end of the war. This was afterward commuted to banishment to the Confederate lines; but, as he was not very cordially received there, he went to Canada. In the same year he was nominated as candidate for governor of Ohio, and was beaten by the largest majority ever given in that State. He was a member of the Democratic National Convention in 1864, at which General McClellan was nominated for the presidency. He died in Lebanon, O., June 17, 1871.

Valley, in geology, a long depression or hollow on the surface of the earth, margined by ground more or less high. It may be on a vast scale of magnitude, as the bed of an ocean would be if upheaved sufficiently to become land, or it may be comparatively small but broad; or narrow, as a glen or a deep gorge, called by Americans a canyon or gulch. It may be surrounded by hills, or may constitute a depression crossing a country from sea to sea. Valleys of stratification are produced by the decay and removal of shale or other soft rocks, while the less destructible hard rocks remain. Other valleys have been excavated by rivers alone. Many valleys on lowlying plains adjacent to the sea have originally constituted river beds and banks, then through a depression of the land the ocean has gained access to them, constituting them estuaries; then again upheaval has made them land valleys. Other valleys have constituted the beds of old lakes. Valleys, resembling troughs, on table-lands are in many cases produced by the flexure of strata laterally, so as to constitute a series of elevations and depressions. A small number of valleys occurring high up mountain sides may constitute old craters of eruption.

In anatomy, a deep fossa separating the hemispheres of the cerebellum (called also vallecula). In architecture, the internal angle formed by the junction of two inclined sides of a roof.

Valley Forge, a village in Chester Co., Pa., on the Schuylkill River, and 24 miles W. of Philadelphia. It is noted as the place where Washington with about 11,000 troops went into winter quarters in December, 1777. It was here also that Baron Steuben became inspector-general of the army, and the treaty of alliance with France was announced, May 6, 1778. During the winter the American army suffered greatly from cold and hunger, and about half of the men were unfit for active duty. In 1893 the Pennsylvania Legislature took steps to acquire and preserve Valley Forge as a public park and historic landmark. On Oct. 19, 1901, a monument was here unveiled by the Daughters of the Revolution in memory of the soldiers who died in camp during the winter of 1777–1778.

Valois, House of, a dynasty which ruled France from 1328 to 1589. In 1285 Philip III. gave the county of Valois (now in the departments of Oise and Aisne) to his younger son Charles, and on the extinction of the Capet dynasty in 1328 the eldest son of this Charles of Valois ascended the French throne as Philip VI., and founded the Valois dynasty, which was followed by the house of Bourbon.

Valparaiso ("the vale of Paradise"), the chief seaport of Chile; in a province of the same name; 90 miles W. N. W. of Santiago, the capital, with which it is connected by railway. It is built at the base of steep, bare hills about 1,600 feet high, and round the head of a bay which possesses good anchorage, but is exposed to N. winds, and therefore unsafe in winter.

The city has been greatly damaged by earthquakes on various occasions (notably 1822, 1851 and Aug., 1906), as well as by a bombardment by a Spanish fleet on March 31, 1866. The climate is good, but dry, little rain falling except during the three winter months. The annual mean temperature is 58°. The chief items of import are copper and copper ore, gold, silver, cereals, wool, hides, and tallow. Pop. (1920) city, 182,242; province, 400.000.

Valve, a kind of movable lid or cover adapted to the orifice of some tube or passage, and so formed as to open communication in one direction and to close it in the other, used to regulate the admission or escape of a fluid, such as water, gas, or steam. Some valves are self-acting; others are actuated by independent external agency. Examples of the former are presented in the valves of pumps, and in the safety valves of steam boilers, and of the latter in the slide-valves appended to the cylinder of a steam engine for the purpose of regulating the admission and escape of the steam.

Valyevo, a garrison town of Servia, on the Kolubara river, 25 miles from the Austrian border to the N., and the same distance from the Bosnian border on the W. Lead mining and smelting are carried on in the neighboring Medvenik Mountains. It is the center of a noted plum-growing district, and has considerable trade in cattle. Pop. about 8,000.

Vampire, the subject of one of the most gruesome superstitions in the world; that of the dead leaving their graves to destroy and prey on the living. It is characteristically Slavonic, though by no means exclusively so, and it is strongest of all in White Russia and the Ukraine. It still dominates the popular imagination in Russia, Rumania, and Servia.

Vampire Bat, any species of the group Desmodontes, consisting of two genera, each represented by a single species. They differ from all other bats in the character of dentition, the upper incisors being very large, trenchant, and occupying the whole space between the canines; premolars very narrow, with sharp-edged longitudinal crowns; molars rudimentary or none; œsophagus very narrow; cardiac extremity of stomach greatly elongated, forming a long, narrow cæcum. The species are sanguivorous, and cling by their extremities to the body of the animal whose blood they may be sucking. They are numerous and dangerous in South America.

Van Amringe, John Howard, an American educator; was graduated at Columbia College (now University) in 1860; was tutor of mathematics there in 1860–1863; adjunct professor of the same in 1863–1873; then was made full professor. In 1894–96 he was dean of the School of Arts; in 1896–1910, dean of Columbia University; in 1899–1902, from the resignation of Seth Low to the election of Nicholas Murray Butler, was acting president. He was very popular with the student body, was retired in 1910, and died Sept. 10, 1915.

Van Benschoten, James Cooke, an American educator; born in La Grange, N. Y., Dec. 15, 1827; was graduated at Colgate University in 1856; was principal of Oxford Collegiate Institute in 1857–1858; took special studies at the Universities of Berlin, Bonn, Gottingen and Athens in 1858–1861. Returning to the United States he was made Professor of Greek at Wesleyan University, and, though he was offered similar chairs in other universities, remained with Wesleyan till his death, Jan. 18, 1902. He was director of the American School of Archæology in Athens in 1884 and 1885 and while in Greece secured from the Greek government the land on which is built the edifice of that institution. Died 1902.

Van Brunt, Henry, an American architect; born in Boston, Mass., Sept. 5, 1832; was graduated at Harvard College in 1854. During the Civil War he served for two years on the staff of the commander of the North Atlantic squadron. After practising his profession in Boston for about 20 years he settled in Kansas City in 1887. He was the architect of many buildings connected with Harvard University and of numerous public edifices in different parts of the United States, including churches, libraries, railroad buildings, etc. He designed the Electricity Building for the World's Co-

lumbian Exposition. He was elected president of the American Institute of Architecture in 1898. Died 1903.

Van Buren, Martin, an American statesman; 8th President of the United States; born in Kinderhook, N. Y., Dec. 5, 1782. In 1812 and 1816 he was elected to the State Senate, and in 1815–1819 he was State attorney-general. In 1821 he entered the United States Senate, of which he was a member till his election in 1828 to the governorship of New York. In the same year he zealously supported Jackson for the presidency, and in 1829 he was rewarded with the portfolio of Secretary of State. This he resigned in 1831. The year following he was elected Vice-President, and in 1836 President, but by a popular majority of less than 25,000, and that largely owing to his declared opposition to the "slightest interference" with slavery. Van Buren's four years of office were darkened by the gloom of financial panic; but what one man could he did to lighten it, by wringing from Congress its assent to a measure for a treasury independent of private banks. This and his firm adherence to obligations of neutrality during the Canadian rebellion of 1837 are his most statesmanlike acts, but both cost him popularity and votes; in 1840 he and his party were overwhelmingly defeated by the Whigs. He lost the nomination in 1844, because he opposed the annexation of Texas; and his nomination by the Free Soil party in 1848 only secured the return of the Whig candidate and the rejection of both Democrats. This was his last important appearance. He died in Kinderhook, July 24, 1862.

Van Buren, William Holme, an American surgeon; born in Philadelphia, Pa., April 5, 1819; was graduated at Yale University and studied medicine at the University of Pennsylvania; was surgeon in the United States army in 1840–1845. He then became connected with the Medical Department of the University of the City of New York, where he was made Professor of Anatomy in 1852; became eminent as a practising physician and an operative surgeon. In 1861 he was active in the establishment of the United States Sanitary Commission; in 1866 he was made Professor of Surgery at the Bellevue Hospital Medical College. He died in New York city, Mar. 25, 1883.

Vance, Zebulon Baird, an American lawyer; born in Buncombe co., N. C., May 13, 1830. He was governor of North Carolina in 1862-1865, and 1877-1879; and United States Senator from 1879 till his death, April 14, 1894.

Vancouver, city and capital of Clarke county, Wash.; on the Columbia river and the Northern Pacific railroad; 6 miles N. of Portland, Or.; is accessible to the largest sea-going vessels; has steamer connection with the chief Columbia river points; is the seat of St. James College, a State Institution for Defective Youth, and the headquarters of the Military Department of the Columbia. Pop. (1930) 15,766.

Vancouver, a city of British Columbia, Canada; on an arm of the Gulf of Georgia, at the W. terminus of the Canadian Pacific railway; is in a rich lumbering and gold, silver, lead, copper, and coal mining region; has an excellent harbor, with steamship connection with all points on the Pacific coast, the British isles, Hawaii, Australia, China, and Japan; and contains over 200 miles of streets, 50 churches, several public parks and many charitable and educational institutions, including the University College of British Columbia. The city was settled by the Canadian Pacific railway in 1885, and has had a remarkable development. Pop. (1930) 240,421.

Vancouver Island, an island belonging to British Columbia; is separated from the mainland by Queen Charlotte Sound, Johnstone Strait, and Strait of Georgia, which taken together form an open sea way. The island is 278 miles in length, and from 50 to 65 miles in breadth; area, 15,937 square miles; pop. 50,154. The whole country is more or less densely wooded. Fruit culture is profitably carried on. The island is very rich in minerals. Besides gold, silver, copper, iron, etc., it possesses great fields of excellent coal, at Nanaimo in particular. Another source of wealth is in the fisheries; good banks lie off the coast, and fish and fish products to the value of $1,200,000 annually are exported from Victoria, the capital.

Vandal, one of a Slavonic or Teutonic tribe who inhabited the banks of the Oder, and the sea coasts of Pomerania and Mecklenburg, about A. D. 250. At the beginning of the 5th century they traversed the Rhine, the Rhone, and the Pyrenees, and founded a powerful kingdom in Spain. They afterward passed into Africa under their king, Genseric, 429, and after a career of conquest on that continent, during which they had embraced Christianity, Carthage fell under their victorious arms, Oct. 9, 439. Here they commenced the formation of a powerful navy, and fitted out an expedition against Rome, which they sacked, June 15–29, 455. Having embraced the Arian heresy in 530, they carried on a cruel persecution against the members of the orthodox faith. Their rule in Africa was destroyed by Belisarius, and the entire nation had disappeared from that continent by 558. A person ignorant and barbarous, and hostile to the progress of the arts and literature is called a vandal.

Vanderbilt, Cornelius, an American capitalist; born near Stapleton, Staten Island, N. Y., May 27, 1794; early engaged in steamboat transportation between Staten Island and New York and so enlarged his business that he soon gained the complete control of the New York and Staten Island lines. Later he started steamboats in various waters — the Hudson, the Delaware, Long Island Sound, and established steamboat and other connections between New York and California. In 1864 he withdrew his capital from shipping and invested it in railroads. He secured the management of one railroad after another and in 1877 controlled stocks representing an aggregate capital of $150,000,000, of which he owned fully one-half. In 1861 he presented the swift $800,000 steamship "Vanderbilt" to the United States government to be used for the capture of Confederate privateers and in 1872 founded the Vanderbilt University in Nashville, Tenn., with $500,000, afterward increased to $700,000. At the time of his death in New York city, Jan. 4, 1877, his fortune was estimated at nearly $100,000,000, and he was supposed to be the richest man in the world.

Vanderbilt, Cornelius, an American capitalist; born in Staten Island, N. Y., Nov. 27, 1843; a son of William Henry. He engaged in railroading and later was made chief director of the Vanderbilt system of railroads in 1885–1895, when he retired from business because of failing health. He united with his brothers in a gift of $250,000 for the erection of the Vanderbilt Clinic of the College of Physicians and Surgeons in 1896; presented an addition costing $250,000 to St. Bartholomew's Home in New York city; gave "Vanderbilt Hall" to Yale University, and large sums of money to various charitable, religious, and public institutions. He died in New York city, Sept. 12, 1899.

Vanderbilt, Cornelius III., an American capitalist; born in New York city in 1873; son of Cornelius II.; was graduated at Yale University in 1895; entered the shops of the New York Central railroad; invented several important pieces of railroad machinery, including a corrugated furnace to be used in place of the ordinary locomotive fire box; lectured at the Sheffield Scientific School of Yale University. In 1917 commanded 102nd U. S. Engineers in World War. Brigadier-General, 1919.

Vanderbilt, William Henry, an American capitalist; born in New Brunswick, N. J., May 8, 1821; son of the first Cornelius; was appointed vice-president of the Hudson River railroad in 1864 and later of the New York Central railroad; and on the death of his father became president of these railroads, together with the Lake Shore and the Michigan Central. Subsequently he secured control of the Chicago and Northwestern and of the Cleveland, Columbus, Cincinnati and Indianapolis railroads and also obtained connections with the New York, Chicago and St. Louis and West Shore railroads. He resigned his various offices, because of failing health, in 1883, and placed his affairs in charge of his son Cornelius. Among his public benefactions were the removal of the obelisk from Egypt to Central Park, New York city, and the gift of $200,000 to the Vanderbilt University fund. He died in New York city, Dec. 8, 1885.

Vanderbilt University, an American educational institution in Nashville, Tenn., originally founded under the name of Central University in 1872.

Van Dorn, Earl, an Americal military officer; born near Port Gibson, Miss., Sept. 17, 1820; was graduated at the United States Military Academy in 1842. On the outbreak of the Civil War in 1861, he joined the Confederate army; took an active part in the battle of Pea Ridge, March 7 and 8, 1862; attacked General Rosecrans at Corinth, Oct. 3-4, 1862, and was defeated with great loss. He was killed in a private quarrel in Maury co., Tenn., May 8, 1863.

Van Dyck, Sir Anthony, except perhaps Titian, the greatest of all portrait painters, was born at Antwerp on the 22d of March, 1599, where his father was a merchant. He studied painting first under Van Balen, and then under Rubens, leaving the studio of the latter after a few years to proceed to Italy, where he spent about five years (1623-1628), chiefly at Genoa, Venice, and Rome, and then returned to Antwerp. Having acquired a great reputation as a portrait painter he was invited to England by Charles I., who bestowed upon him the honor of knighthood, a considerable annuity, and a summer and winter residence. The painter rewarded this generosity by unceasing diligence, and executed, besides a multitude of portraits, several mythological and historical paintings. He was fond of splendor, and lived in a very expensive style. He died in 1641 and was buried in St. Paul's. Van Dyck's great strength lay in portrait painting, but he sometimes amused himself with engraving and etching.

Van Dyke, Henry Jackson, an American diplomat; born in Germantown, Pa., Nov. 10, 1852; was graduated at Princeton University in 1873, at the Princeton Theological Seminary in 1877, and at Berlin University in 1878; and soon afterward assumed the pastorate of the United Congregational Church in Newport, R. I. He was chosen pastor of the Brick Presbyterian Church, in New York city in 1883 and continued in that charge till 1900, when he resigned to become Professor of English Literature in Princeton University. In 1913–17 he was Minister to the Netherlands and Luxembourg. He was author of a large number of religious and other works.

Van Dyke, John Charles, an American art critic; born in New Brunswick, N. J., April 21, 1856; was educated at Columbia and Rutgers Colleges; admitted to the bar in 1877; studied art in Europe, and on his return to the United States devoted himself to literary work and to lecturing on art in Rutgers, Harvard, Princeton, and other universities. He was the editor of the "Studio" in 1883-1884, the "Art Review" in 1887-1888, and the author of "Books and How to Use Them"; "Nature for its Own Sake"; etc.

Van Dyke, Theodore Strong, an American lawyer and writer on outdoor sports; born in New Brunswick, N. J., July 19, 1842; was graduated at Princeton College in 1863; practised law nine years; health failing, became an irrigation engineer, residing in Southern California.

Vane, Sir Henry, commonly called Sir Harry Vane, an English statesman and writer; born in Hadlow, Kent, England, in 1612; eldest son of Sir Henry Vane, secretary of state. He was educated at Westminster and Oxford, afterwards completing his education at Geneva, where he became a Puritan and a republican. Returning to England, he found that his religious and political opinions exposed him to much ill will and annoyance and he consequently emigrated to New England, arriving at Boston in 1635. He was elected governor of Massachusetts in 1636. In 1637 he returned to England, after which he was knighted, entered Parliament, and became treasurer of the navy. In 1656 he was imprisoned in Carisbrooke Castle for four months, by order of Cromwell, on account of a pamphlet he had written. On his release he continued to resolutely oppose the government of Cromwell and of his son Richard. In 1659 he was a member of the committee of safety and president of the council of state. After the Restoration he was sent to the Tower in February, 1660, and subsequently moved from prison to prison. A rising

of the Fifth Monarchy party in January, 1661, led to increased severity toward him, and he was tried for high treason before the Court of King's Bench, June 2, 1662, condemned, and beheaded on Tower Hill on June 14.

Van Hise, Charles R., an American geologist; born in Fulton, Wis., May 29, 1857; was graduated at the University of Wisconsin in 1879. In 1888 he accepted the chair of geology in the University of Wisconsin; in 1892 was made non-resident Professor of Structural Geology at the University of Chicago; and in 1903, after 25 years' service there, became president of the University of Wisconsin. In 1893 he joined the editorial staff of the "Journal of Geology." He was author of "Principles of North American Pre-Cambrian Geology;" "Some Principles Controlling the Deposition of Ores;" "A Treatise on Metamorphism;" etc.

Van Horn, James J., an American military officer; born in Mount Gilead, O., Feb. 6, 1835; was graduated at the United States Military Academy in 1858. At the beginning of the Civil War he was serving at San Antonio, Tex., where he was taken prisoner and held for a year. Returning North he was made aide-de-camp in the Army of the Potomac; took part in the engagements at South Mountain, Antietam, and Bethesda Church; and so distinguished himself at Cold Harbor that he was brevetted major. In 1891 he was promoted colonel of the 8th Infantry, which regiment he commanded during the Santiago campaign in Cuba. He died in Fort Russell, Wyo., Aug. 30, 1898.

Van Horne, Sir William Cornelius, a Canadian railroad official; born in Joliet, Ill., Feb. 3, 1843; began his career as an office boy in a railroad station; was rapidly promoted till he was made general superintendent of the St. Louis, Kansas City, and Northern railway in 1872. Later he successively held the same post on the Southern Minnesota, the Chicago and Alton, and the Chicago, Milwaukee and St. Paul railroads. In 1881 he was requested to preside over the destinies of the Canadian Pacific. In 1896 he received the honor of knighthood. He died Sept. 11, 1915.

Vanilla, a genus of epiphytal Orchideæ, natives of tropical America and Asia. They are distinguished from most other orchids by their climbing habit; they cling with their aerial roots to the stems of trees or to rocks, attain the height of 20 or 30 feet, and obtain their chief sustenance from the atmosphere. There are about 20 species comprised in the genus. The flowers are thick, fleshy, and fragrant, but dull in color. Vanilla is remarkable among orchids as possessing the only species of the order that has any economical value. From the fruit of several species the vanilla of commerce is obtained, the best being pro-



VANILLA PLANIFOLIA, PORTION OF STEM WITH SPIKE OF FLOWERS.
a, a seed pod.

duced by the West Indian species, which is now cultivated in many tropical countries. The fruit is cylindrical, about a span long, and less than half an inch thick. It is gathered before it is fully ripe, dried in the shade, and steeped in a fixed oil, generally that of the cashew nut. It contains within its tough pericarp a soft black pulp, in which many minute black seeds are imbedded. It has a strong, peculiar, agreeable odor, and a warm, sweetish taste. Vanilla is much used by perfumers, and also for flavoring chocolate, pastry, sweetmeats, ices, and liquors.

Van Ness, Cornelius Peter, an American diplomatist; born in Kinder-

hook, N. Y., Jan. 26, 1782; settled in Burlington, Vt. In 1817–1821 he was a commissioner to arrange boundary lines of the United States under the treaty of Ghent; in 1821–1823 was chief justice of Vermont; and in 1823–1829 was governor of that State. In the latter year he was appointed United States minister to Spain, where he remained till 1837. He died in Philadelphia, Pa., Dec. 15, 1852.

Van Ness, Thomas, an American clergyman; born in Baltimore, Md., June 29, 1859; was educated at the Philadelphia High School and Harvard College; entered the Unitarian ministry in 1884, and had churches in Denver, Col. (1885), and San Francisco, Cal. (1889–1893), and went to the Second Church in Boston, Mass., in 1893. He wrote "The Coming Religion"; "My Visit to Count Tolstoi"; etc.

Van Ness, William Peter, an American jurist and author; born in Ghent, N. Y., in 1778. He was the friend of Burr, took his challenge to Hamilton, and was one of Burr's seconds. Under the pen-name of "Aristides" he published: "Examination of Charges against Aaron Burr"; with John Woodworth edited "Laws of New York." He died in New York city, Sept. 6, 1826.

Van Rensselaer, Henry Kilian, an American patriot of Dutch descent; born in Albany, N. Y., in 1744; commanded a regiment in the Revolutionary War; distinguished himself on several occasions; and in October, 1777, aided in the actions which led to the surrender of Burgoyne. After the peace a famous mutiny broke out among his troops. He died in Greenbush, N. Y., Sept. 9, 1816.

Van Rensselaer, Mrs. Mariana (Griswold), an American art critic; born in New York city, Feb. 23, 1851. She contributed largely to current periodicals on art and architecture, and published the valuable books: "Art Out of Doors"; "English Cathedrals"; "American Etchers"; etc.

Van Rensselaer, Stephen, an American military officer; born in New York, Nov. 1, 1765; was graduated at Harvard College in 1782. He became major of militia in 1786, was promoted colonel in 1788, and Major-General in 1801; and in 1812 was assigned to the command of the Northern frontier, in which capacity he commanded at the battle of Queenstown Heights, Oct. 13–14, 1812. On Oct. 24, he resigned his commission because of public dissatisfaction with his conduct in that engagement. He was chosen chairman of the Erie Canal Commission; became a regent of the University of New York; made a geological survey along the line of the Albany and Buffalo canal in 1821–1823; founded the Rensselaer Polytechnic Institute at Troy, N. Y.; and was a member of the State Constitutional Convention in 1821, and of Congress in 1823–1829. He died in Albany, N. Y., Jan. 26, 1839.

Van Reypen, William Knickerbocker, an American naval officer; born in Bergen, N. J., Nov. 14, 1840; was educated at the University of New York; he was appointed surgeon in 1868; medical inspector in 1887, and medical director in 1895; represented the medical department of the United States navy at the Twelfth International Medical Congress in Moscow, Russia, in 1897; and was appointed Chief of the Bureau of Medicine and Surgery in December of the same year. During the Spanish-American War he designed and fitted out the hospital ship "Solace," the first of its kind ever used in naval warfare.

Van Sant, Samuel R., an American executive; born in Rock Island, Ill., May 11, 1844; received a collegiate education. During the Civil War he served for three years as a private in Co. A, 9th Illinois Cavalry. He served as speaker of the Minnesota Legislature in 1895 and was governor of Minnesota in 1901–05.

Vanuxem, Lardner, an American geologist; born in Philadelphia, Pa., July 13, 1792; was graduated at the School of Mines, Paris, in 1819. In 1827–1828 he examined the geological features of the States of New York, Kentucky, Ohio, Virginia, and Tennessee. His efforts resulted in the organization of the Association of American Geologists, which grew to be one of the largest scientific societies in the world. He died in Bristol, Pa., Jan. 25, 1848.

Van Vleck, John Monroe, an American educator; born in Stone Ridge, N. Y., March 4, 1833; was graduated at Wesleyan University in 1850; became adjunct Professor of Mathematics in Wesleyan University in 1853; Professor of Astronomy and Mathematics in 1858; acting president in 1872–73, 1877–89, and 1896–97; accompanied the Solar Eclipse Expedition to Mt. Pleasant, Ia., in 1869; member of leading scientific societies. He died Nov. 4, 1912.

Van Vliet, Stewart, an American military officer; born in Ferrisburg, Vt., July 21, 1815; was graduated at the United States Military Academy in 1840. He took part in the action at Monterey and was present at the siege of Vera Cruz and Mexico. In 1861–1862 he was chief quartermaster of the Army of the Potomac. He was brevetted Major-General U. S. A. in 1865, for "faithful and distinguished services during the war"; promoted colonel and assistant quartermaster-general in June, 1872; and was retired in 1881. He died in Washington, D. C., March 29, 1901.

Van Wyck, Charles Henry, an American lawyer; born in Poughkeepsie, N. Y., May 10, 1824; was graduated at Rutgers College in 1843; was a member of Congress, 1859–1863. He entered the Civil War as colonel of the 56th New York Volunteers, with which he served till the conclusion of peace; was again in Congress in 1866–1870; settled in Nebraska in 1874; and was elected to the United States Senate as a Republican in 1880. He exerted much influence in forming the Farmer's Alliance movement in Nebraska, and was the Populist candidate for governor in 1892. He died in Washington, D. C., Oct. 24, 1895.

Vapor, in physics, an aeriform fluid into which some volatile substance is changed by the action of heat. Vapor is essentially the same as gas, but the word vapor is conventionally limited to the gaseous state of a body which is liquid or solid at ordinary temperatures, while the term gas is applied to aeriform bodies which are in that rarefied state at ordinary temperatures. Thus we speak of hydrogen gas, but of watery vapors. Vapors, like gases, have a certain elastic force, by which they exert a pressure on every part of any vessel in which they are enclosed. Vapors are formed instantly in a vacuum; in the atmosphere they are generated more slowly. When not saturated they exactly resemble gases in their action; when saturated and in contact with the liquid by which they were generated, they can neither be compressed nor expanded, but remain constant, both in their elastic force and in their density.

Varennes-en-Argonne, a town of France, Department of Meuse, on the Aire river; 18 miles N. W. of Verdun; noted as the place where Louis XVI. was recognized in his flight from Paris in 1791, arrested, and taken back to the capital, where he became, for a while, the Constitutional King. Pop. about 3,500.

Variation, in astronomy, any deviation from the mean orbit or mean motion of a heavenly body produced by the perturbation of another body or bodies. Thus the planets are considered to move mathematically in elliptic orbits, which would be the case if they were subject to the attraction of the sun only, but being acted on by each other, there is supposed to be a minute and slow but constant variation in the elements of the ellipse. Variations which are compensated in short intervals are called periodic, and those which require for their compensation a long period are called secular.

In biology: (1) A tendency in all organisms to vary slightly from other organisms produced by the same parents. (2) Hereditary modification. (3) A modification directly due to the physical conditions of life; such as the dwarfed condition of shells in the Baltic, or of stunted plants on Alpine summits. (4) An organism, or a group of organisms, exhibiting modification due to external conditions.

In grammar, a change of termination of words, as in declension, conjugation, comparison, and the like; inflection. In music, an air or theme with variations is a musical composition in which a simple melody is first given out, and then several times repeated, each repetition containing

changes by means of broken harmony, counterpoint, broken rhythm, the arpeggio, scale passages, and even by modification of key. In navigation, the angle included between the true and magnetic meridians of any particular place.

Varick, Theodore Romeyn, an American surgeon; born in Dutchess co., N. Y., June 24, 1825; was graduated at the Medical Department of the New York University in 1846. He settled in Jersey City, N. J., in 1848; and became famous as a surgeon. He introduced the use of cocaine in capital amputations, and was the first in the United States to employ the method of Trendelenberg in performing amputations at the hip joint. He also perfected a method for the use of hot water in surgery, by which he performed the largest number of successful operations known to his time, failing in only three cases out of 54. Died in Jersey City, N. J., Nov. 23, 1887.

Varicose Veins. When a vein becomes dilated at a certain part of its course, for no apparent physiological object, such as relieving the venous circulation elsewhere it is said to be varicose, the actual dilatation being called a varix. Some veins seem to be unaffected by varices, which, however, are of common occurrence in the sub-mucous veins of the rectum, in the spermatic veins, and in the veins of the lower extremities. They are occasionally (but very rarely) found in other veins. Varices may occur at almost any period of life, but are chiefly developed during middle age. Their formation is aided by any condition of the system which impedes the circulation, as certain diseases of the heart, lungs, and liver, and by continued high living, which is especially liable to induce hemorrhoids.

Variegation, in plants, is a condition in which other colors are exhibited in parts where the normal color should be green. Thus white, yellow, or other tints take the place of green in the leaves and other herbaceous parts. Yet variegation is regarded in botany as a disease, the causes of which are unknown. All that is yet determined respecting it is that it is invariably accompanied by a more or less complete suppression of the granular matter which underlies the green parts.

Varna, a fortified town of Bulgaria, of which it is the chief port; on the W. shore of the Black Sea; 47 miles E. of Shumla. Its harbor, while only an open roadstead, affords excellent anchorage. The town has extensive railroad connections, and a large trade, especially with Constantinople, in grain. In 1444 the Turkish Sultan Amurath II. here defeated the Hungarian army under King Ladislas and John Hunyady; in 1828 the Russians occupied it; in 1829 Turkey regained it by the Peace of Adrianople; in 1854 the Crimean expedition sailed hence; and Oct. 7 and Dec. 20, 1915, it was bombarded by Russian warships.

Varnish, a thin, resinous fluid, which, when spread over the surface of wood, metal, glass, or other solid substance, forms a shining coating, impervious to air and moisture. The great number of varnishes consist of some resinous material, dissolved in linseed oil, alcohol, or some liquid hydrocarbon such as turpentine and benzole. Those made by dissolving a resin in a non-volatile drying oil, like that from linseed, are called oil varnishes; and those prepared by using volatile solvents (alcohol, benzole, etc.), for the resins are called spirit varnishes. In the case of the latter the solvent becomes dissipated as the varnish dries, so that when any surface is coated with a varnish of this kind only a film or coating of resin remains, which is apt to crack and peel off; but means are taken either in the preparation of the varnish or in the laying of it on to counteract this tendency. With an oil varnish, on the contrary, the oil remains as part of the coating, giving it toughness, while the resin gives it hardness.

Varnish Tree, the name given to various trees which furnish varnish. They are chiefly natives of the hotter parts of the Eastern Hemisphere, and the varnish tree of each country or large province is, as a rule, different from that of others.

Varro, Marcus Terentius, a Roman author; born probably of equestrian rank in the Sabine town of Reate, in 116 B. C. He saw some service under Pompey, and in the civil

war was legate in Spain with Petreius and Afranius. The second triumvirate plunged him into danger, and Antony plundered his splendid Cumæan villa, burned his beloved books, and placed his name in the list of the proscribed. But he was soon exempted, and Augustus even restored his property, so that he was able to spend his latest years in peace. He survived till 27 B. C. Of numerous writings chiefly on language, history, and philosophy, only one has come down to us entire — a treatise on agriculture. Fragments of a treatise on the Latin language are also extant.



CHINESE, JAPANESE, AND INDIAN VASES.

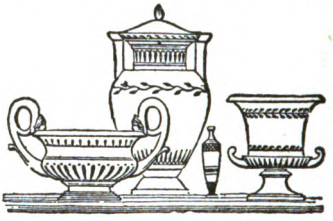
Varuna, in the Vedic mythology of the ancient Hindus, one of the Adityas, or offsprings of Aditi, the deity of space, and among these, one of the most prominent. He is often invoked together with Mitra, some times together with Agni, the god of fire, or with Indra, or other elementary deities; but frequently he is also separately praised by the poets of the Vedic hymns. He is particularly the god of waters.

Varus, Publius Quintilius, a Roman general, celebrated in consequence of the great defeat that he suffered at the hands of Arminius, leader of the Germans. In 7 B. C., having received from Augustus the command to introduce the Roman jurisdiction into the German territory just conquered by Drusus, he was carrying out his mission when he was suddenly attacked by an immense host under Arminius, and his whole army was destroyed. Varus put an end to his own life. The exact scene of this battle is disputed.

Vascular System, that portion of the interior of a plant in which spiral vessels or their modifications exist. In an exogenous stem, the vascular system is confined to the space between the pith and the bark. In an endogenous stem, the vascular system exists in the form of fibrous bundles, consisting of woody tissue containing spiral or other vessels, the whole imbedded in the cellular system.

In comparative anatomy, the circulatory system. A term applied to the whole series of vessels — arteries, veins, lymphatics, and lacteals — directly or indirectly connected with the circulation of the blood.

Vase, a vessel of various forms and materials, applied to the purposes of domestic life, sacrificial uses, etc. They were often used merely for ornament, or were at least primarily ornamental in character and design. The antique vases found in great numbers in ancient tombs and catacombs in Etruria, Southern Italy, Greece, Sicily, etc., and used to contain the ashes of the dead, were for the most part made of



GRECIAN VASES.

baked clay, painted and glazed. Rare Chinese and Japanese vases are highly prized, and $20,000 has been paid for one vase at auction in New York.

Vaseline, or **Vaselene,** petroleum jelly, a pale yellow, translucent, semi-solid substance, consisting of a mixture of the hydrocarbons, obtained by treating the undistilled portion of petroleum with superheated steam, and filtering while hot through animal charcoal.

Vassar College, an American institution of learning, established by Matthew Vassar in Poughkeepsie, N.

Y., in 1861, for the higher education of women. The first donation was $428,000 for buildings and furnishings. This amount was increased by a bequest of $400,000. Later Matthew Vassar, Jr., gave the institution $130,000 and John Guy Vassar, $444,000. There have since been large donations from other persons. The campus, which contains 210 acres, is 3 miles from the Hudson river, and is mostly laid out as a park. In its course of study the institution is on a par with the highest-grade colleges in the United States.

Vassar, Matthew, an American philanthropist; born in Norfolk co., England, April 29, 1792. He emigrated to the United States, where he accumulated a large fortune. In 1861 he gave $428,000 to found Vassar College. He died while reading an address to the trustees of the college, June 23, 1868. By his will he left over $400,000 additional to the institution.

Vatican, The, the most extensive palace in the world, and, as the residence of the Pope, and the storehouse of valuable literary and art collections, one of the chief attractions of modern Rome. In 1450 Nicholas V., with the object of making the Vatican the most imposing of palaces, began the work of combining with it the residences and offices of the cardinals, and the small portion completed by him, afterward occupied by Alexander VI., and named Tor di Borgia, was extended by subsequent Popes. The palace now comprises 20 courts and some 11,000 halls, chapels, saloons, and private apartments. Chief among its great art treasures are the Sistine frescoes of Michaelangelo and Raphael's Stanze and Loggie. The picture gallery is one of the richest in Rome, and the collection of antiquities is the finest in the world, including extensive Egyptian and Etruscan museums, and comprising among its classical sculptures the Torso of Hercules, the Laocoon, and the Apollo Belvedere. The library now contains nearly 25,000 MSS., of which 17,400 are Latin, 3,450 Greek, and 2,000 Oriental; it also contains about 50,000 printed books. The privilege of studying in the art galleries, curtailed since 1870, was extended by Leo XIII. in December, 1878. The Vatican was damaged by fire, November 1, 1903, but it was announced on authority that none of its pictorial or literary treasures were injured.

Vatican Council, the First Council of the Vatican, or the Nineteenth General Council, which assembled on Dec. 8, 1869. At the opening sitting 719 prelates were present, and the number rose in the following year to 764. The work done consisted of two constitutions — one, "Of the Catholic Faith," treating of the primary truths of natural religion, revelation, faith, and the connection between faith and reason; the other, "Of the Church of Christ," treating of the primacy of the Roman See.

Vauban, Sebastien Le Prestre, Seigneur De, Marshal of France, and the greatest military engineer of that country, descended of an ancient and noble family, was born 1633 and early entered the army, where he rose to the highest military rank by his merit and services. He was made governor of the citadel of Lille in 1668, commissioner-general of fortifications in 1677, and marshal of France in 1703. He died at Paris 1707. As an engineer he carried the art of fortification to a degree of perfection unknown before his time. He strengthened and improved above 300 citadels, erected 33 new ones, and directed 53 sieges.

Vaudeville, a term applied to a 15th century Norman folk-song, which originated with Oliver Basselin, who lived in the Val or Van de Vire. Its characteristics were perpetuated in plays interspersed with songs, called Vaudevilles, and occasionally Virelais. In the United States the term denotes light theatrical entertainments of a mixed character.

Vaughan, Herbert, Roman Catholic prelate, born England, April 15, 1832; died June 24, 1903. Was bishop of Salford, 1872 to 1892, and then Archbishop of Westminster till death. Made cardinal 1893.

Vaughan, Victor Clarence, an American physician; born in Mount Airy, Mo., Oct. 27, 1851; was graduated at Mount Pleasant College, Huntsville, Mo., in 1872, and at the Medical Department of the University

of Michigan in 1875; became dean of the Department of Medicine and Surgery in 1890. During the Santiago campaign of 1898 he was surgeon of the 33d Michigan Volunteer Infantry. He was made division surgeon in the same year. In 1900 he became surgeon-general of the Spanish-American War Veterans.

Vault, an arched roof; a concave roof, or roof-like covering, hence applied figuratively to the sky. In architecture, an extended arch covering an apartment so constructed that the stones, bricks, or other material of which it is composed sustain and keep each other in their places. Vaults are of various kinds; a cylindrical vault has a semi-circular arch; a covered vault has an arch which springs from all sides of its plan; a groined vault is one formed by two vaults intersecting at right angles. When a vault is of greater height than half its span, it is said to be surmounted, and when of less height surbased. A rampant vault is one which springs from planes not parallel to the horizon; one vault placed over another constitutes a double vault. A conic vault is formed of part of the surface of a cone, and a spherical vault of part of the surface of a sphere. A vault is simple when it is formed by the surface of some regular solid, and compound when compounded of more than one surface of the same solid, or of two different solids.

Vaux, Calvert, an American landscape architect; born in London, England, Dec. 20, 1824; came to the United States in 1848, and formed a partnership with Andrew J. Downing, with whom he laid out the grounds surrounding the National Capitol and the Smithsonian Institution. Afterward in conjunction with Frederick Law Olmsted he made plans for the laying out of Central Park, New York city, and Prospect Park, Brooklyn, N. Y. He also planned parks for Chicago, Buffalo, Newark, N. J., and other cities, and laid out the State Reservation at Niagara Falls. He became landscape architect of the Department of Public Parks of New York city, and was attached to the Consolidation Commission of Greater New York. He died in Bensonhurst, L. I., Nov. 19, 1895. The transverse roads in Central Park, New York, which made possible the maintenance of that great pleasure-ground in the heart of the metropolis, were conceived and planned by Vaux.

Vaux, Richard, an American penologist; born in Philadelphia, Pa., Dec. 19. 1816; was admitted to the bar in 1836, and for a year was secretary of the American legation in London. He was then sent to Brussels to aid in the reorganization of the American legation. He was recorder of deeds in Philadelphia in 1842–1849. He became widely known by his publication, "Recorder's Decisions" (1845). Not a single decision of his was ever reversed by a higher court. He was appointed an inspector of the Eastern Penitentiary in 1843, and for more than 50 years prepared its annual reports. He was elected mayor of Philadelphia on the Democratic ticket in 1855. He became one of the chief penologists of the United States, and on that subject lectured and prepared a large number of publications. He died in Philadelphia, Pa., March 22, 1895.

Veda, the name of a body of religious writings which the Hindus believe to be divinely inspired. This body primarily consists of four collections of hymns, detached verses, and sacrificial formulas — viz., the Rig Veda, or Veda of praises or hymns; the Sama Veda, or Veda of chants or tunes; the Yajur Veda, or Veda of prayers; and the Atharva Veda, or Veda of the Atharvans — to each of which are attached certain theological prose works called Brahmana, and intended chiefly to elucidate the meaning and application of the sacred texts, especially from a sacrificial point of view. The first three Vedas are often referred to as the "trayi vidya," or threefold science; and they alone must originally have formed the sacred canon, while the fourth Veda, which is less archaic in language, was not recognized till a later period. The Samhitas of the Sama Veda and Yajur Veda are of a purely sacrificial and professional character, being intended to serve as text-books for two of the four chief classes of priests. The Riksamhita, on the other hand,

though likewise assigned to a special class of priests — viz., the invokers (or sacrificers, Hotar), is not a sacrificial text-book in the same narrow sense of the word; but it has rather to be looked on as a collection of all the sacred poetry which was within reach of the collectors.

Vedanta, in India, a system of religion and philosophy professedly founded on the Vedas. It is divided into the Purva mimansa and the Uttara mimansa, or the former and the latter mimansas, which constitute two of the leading darsanas or schools of philosophy. As the first of these is chiefly practical, the Vedanta philosophy is mainly derived from the second. It was founded by Vyasa, and was modified by Sankara, its commentator. The former identified the world with God, and contended earnestly for the reality of the external universe which he held to have been created by God; the later Vedantists maintained that the universe is but an illusion projected by God, and is itself God. The present Vedanta system is Pantheistic. It has many adherents among the more educated Hindus.

Vedder, Henry Clay, an American historian; born in DeRuyter, N. Y., Feb. 26, 1853; was graduated at the University of Rochester in 1873 and at the Rochester Theological Seminary in 1876; was on the editorial staff of "The Examiner," a Baptist weekly, in 1876–1892; and was its editor in 1892–1894. In the latter year he became Professor of Church History at Crozer Theological Seminary. Wrote "History of the Baptists of the Middle States," etc.

Vegetable Chemistry, the department of organic chemistry which investigates the chemical compounds found in vegetables. These compounds are chiefly made up of carbon, hydrogen, oxygen, and nitrogen, but potash, soda, lime, and other substances are occasionally present in small and variable quantities. Sugar, starch, gum, and other distinct compounds existing already formed in plants, and capable of separation without suffering decomposition are called proximate or immediate principles of vegetables. Proximate analysis is the separation of a particular principle from others with which it is mixed. Ultimate analysis consists in the reduction of the proximate principles to their simplest parts. The more important classes of compounds to be obtained from vegetables are acids, alkalis or alkaloids, oils, and resins. Coloring matter, tannin, albumen, gluten, yeast and other substances are also obtained. Of the acids, the chief are acetic acid or vinegar, oxalic, tartaric, and benzoic acids. The alkaloids are organic bases which produce remarkable toxicological effects. During the germination of seeds there is a conversion of starchy matter into sugar. The nutrition of plants may be regarded as depending on solar energy, organic and mineral constituents, and water.

Vegetarianism, the theory and practice of living solely on vegetables.

In strictness, no one is yet entitled to the name of vegetarian, but since it is believed that the eating of flesh is antagonistic to progress on so many grounds, and that reform in food is the basis of all individual reform, the renunciation of flesh in whole or in part is made the test question of vegetarianism, leaving the positive question of what articles in the vegetable kingdom constitute man's proper food to be one of the branches of further study.

Vegetarianism has spread so extensively that in addition to its pledged adherents it has a still greater number who practise abstinence from flesh to a greater or lesser degree in obedience to medical advice, for the curing or relieving of disorders of digestion, gout, and rheumatism. The Catholic Church enjoins abstinence from flesh during Lent, and on some other days during the year. Many religious orders (e. g., the Trappists) abstain wholly from flesh. Brahmins also abstain from flesh and eggs. The Vegetarian Federal Union was formed in 1889. Its offices are in London. To it are affiliated the Vegetarian Society, the London Vegetarian Society, a considerable number of other English societies, and those of the United States (founded in 1850), Germany, and Australia. An international congress was held in Cologne in 1889, and in London in 1890.

Vehmgerichte. See FEMGERICHTE.

Veil, or **Vail,** that which conceals; a cover to conceal the face; any kind of cloth which is used for intercepting the view, and hiding something; especially a piece of thin cloth or silk stuff, used by women to hide their faces. A veil is an indispensable part of the out-door dress of Eastern ladies, who live secluded from the sight of all men except their own husbands and their nearest relatives.

Vein, in anatomy, one of a number of thin, ramifying, elastic tubes arising in the extremities of the body and proceeding by a more or less direct course to the heart, to which they carry back the blood sent forth by the arteries and transferred to them by the capillaries connecting the two kinds of vessels. They fall under three great divisions: the pulmonary, the systemic veins, and those constituting the portal system. The pulmonary veins consist of four short venous trunks which carry the red blood back from the lungs to the left side of the heart, and which are found two on each side in the root of the corresponding lung. The systemic veins arise by small branches which receive the blood from the capillaries throughout the body and uniting to form larger vessels and then two large venous trunks, the superior and inferior venæ cavæ, finally enter the right auricle of the heart, into which the coronary veins also conduct the blood which nourishes that organ itself. The veins of the portal system bring back the blood from the stomach, the intestines, the spleen, and the pancreas; then joining, they form the great portal vein which ramifies in the surface of the liver, after the manner of an artery, before finally entering the heart by the inferior vena cava.

The anastomoses of veins are much larger and more numerous than those of arteries. In many parts of the body there are two sets, one superior, the other more deeply seated, with frequent communications between the two. Some veins possess valves, while others are destitute of them. The walls of the veins are thinner than those of the arteries, but the veins themselves are less elastic. The total capacity of the veins is much greater than that of the arteries; so much so that the veins alone can hold the mass of blood which in life is distributed over both arteries and veins. While there is a considerable pressure even in the smaller and a greater one in the larger arteries, the pressure in veins is greatest in those of smaller bore, and even in them is but slight; hence, while a pulse is present in the arteries, it is as a rule absent in the veins. The velocity of the blood in the veins is least in those of smaller diameter and greatest in the larger trunks, which is the reverse of the rule in arteries. When a vein is cut the flow from the distal end — i. e., from the end nearest the capillaries — is continuous, but the blood is ejected with little force.

In botany, one of the ramifications of the petiole among the cellular tissue of a leaf, of which they constitute the framework. They are of fibro-vascular tissue, and carry sap into the parenchyma.

In geology, a crack in a rock filled up by substances different from the rock. These may be either earthy or metallic. In very many cases the fissures have been produced by volcanic or earthquake action.

Velasquez, Diego Rodriguez de Silva y, a Spanish painter; born of a Portuguese family in Seville, June 5, 1599. In 1622 he went to Madrid, where, in the year following, his portrait of Olivarez procured him the patronage of Philip IV., a wonderful portrait of whom at once established the fame of the painter. As court painter he produced many portraits of the royal family and of illustrious visitors, the latter including one of Charles I. of England, which has been lost. Velasquez formed a cordial friendship with Rubens during the diplomatic visit of the Fleming to Madrid in 1628. In 1629–1631 he made a tour in Italy, visiting Rome, Naples, Florence, Venice, etc., and being received everywhere with the highest distinction. On his return to Madrid he made rapid progress in the royal favor; was made royal Ayuda de Camera or chamberlain (1643); his studio was removed to the palace, and there in friendly converse with the painter the king spent much of his leisure.

In 1648 he was sent by the king to Italy, commissioned to buy works of art. At Rome he painted the portrait of Innocent X., which is now the gem of the Doria gallery. He was subsequently appointed Aposentador Mayor, or royal seneschal, and in 1656 received the Cross of Santiago, an honor till then reserved for the highest nobility. But Velasquez did not thrive under his load of honors; his health gave way in the service of the court; and he died in Madrid, Aug. 7, 1660.

Velasquez, Diego de, a Spanish explorer; born in Cuellar, Spain, about 1460; accompanied Columbus to Espanola in 1493, and there distinguished himself in the wars against the Indians and amassed a fortune. In 1511 Diego Columbus appointed him to conduct an expedition against Cuba, and in the latter part of the year he landed on the E. shore at the head of 300 troops. He quickly conquered Hatuey the cacique, and put Pamfilo de Narvaez, his lieutenant, in active command. The unarmed natives were soon overcome, and subjected to slavery, in which they soon perished. Later Velasquez established Matanzas, Trinidad, Santiago, and other places. In 1517 he joined Cordova in an expedition after slaves and they discovered Yucatan. Soon after, on learning of the rich Aztec empire, he fitted out an expedition for its conquest and placed Cortez in command. When the latter had reached the site of Vera Cruz he took independent command. Pamfilo de Narvaez was sent to capture him in 1520, but was defeated. Velasquez died in Havana in 1522 or 1523.

Velocipede, a word applied to any kind of carriage driven by the feet and formerly to bicycles and tricycles. The name was first used in France, toward the end of the 18th century, when riding on the dandy horse became popular. The two wheels of the dandy horse were of equal size, connected by a bar, on which a saddle was placed, and astride of which the rider sat. The impetus was given by the rider's feet touching the ground, alternately pushing and being raised. Self-propulsion was next attempted by pulling levers with the hands or treading with the feet. In this kind of velocipede there were three wheels; but it never became very popular, on account of the labor.

The velocipede known as a safety bicycle has two small wheels of the same size (or nearly so), the rider sitting well back from the front wheel, and thus possessing greater security from falling forward, and the requisite velocity is attained from the small wheels by the principle of "gearing up," adopted from the tricycle, the various classes of machines thus appropriating improvements from each other.

Velocity, in its full significance, involves the notion of direction of motion as well as that of speed or rate of motion. The motion of speed is a very familiar one. In measuring it we assume the possibility of measuring space and time; and the unit of speed is that speed which a moving point would need to have in order to pass over the chosen unit of space in a unit of time. Again, since at every instant the moving point must be moving in a definite direction, as well as with a definite speed, it follows that velocity also is an instantaneous property. If it does not change from instant to instant, the velocity is constant, and the point moves in a straight line with constant speed.

Velvet, one of the most familiar of what are known as pile fabrics. It is produced by adding to the usual warp and weft threads of plain weaving an aditional row of warp yarns which are woven into the ground of the cloth and passed over wires on the surface. In the case of a loop pile the wires are simply drawn out, but for velvet or other cut pile a knife is first passed along a groove on the top of each wire to cut the pile before the wire is withdrawn. Real velvet is made entirely of silk, but a kind is made with a silk face on a cotton basis. The name velveteen is, however, extended to fabrics in which silk and cotton are mixed throughout. Modern velvets are largely made at Lyons and Crefeld.

Venable, Francis Preston, an American chemist; born in Prince Edward co., Va., Nov. 17, 1856; was graduated at the University of Virginia in 1879, and studied at the Uni-

versities of Bonn, Gottingen, and Berlin successively in 1879–1880, 1881, and 1889. In 1900–14 he was president of the University of North Carolina, and then its Professor of Chemistry.

Venable, William Henry, an American author; born in Warren co., O., April 29, 1836. He published: "A History of the United States," "Footprints of the Pioneers in the Ohio Valley," "Dream of Empire," etc.

Vendace, a species of fish found in rivers and lakes of Sweden, and in the Castle Loch at Lochmaben in Scotland. It is popularly said to have been introduced at Lochmaben by Queen Mary; but the statement rests on no authority. Like most of its congeners, the vendace is a palatable fish. Its food consists chiefly of minute crustaceans. It generally swims in shoals, often with a remarkable separation of the sexes. It attains a length of 6–8 inches.

Vendetta, a particular case of the wider custom of blood-feud, by which every member of a stock, or body of men between whom blood relationship subsists, is bound to aid in taking vengeance (on the offender if possible, or on the stock to which he belongs) for a personal injury done to any of his kinsmen. The vendetta which exists in Corsica, and to a less extent in Sicily, Sardinia, and Calabria, is the practice of taking vengeance on the murderer of a relative; and this duty is imposed primarily on the next of kin, but in a less degree on all the relatives of the murdered individual. If the murderer succeeds in eluding his pursuers, then vengeance may be taken on any of his relatives. Between 1770 and 1800, when the vendetta was at its height, some 7,000 murders are said to have occurred in Corsica owing to this practice of private vengeance. A law prohibiting the carrying of arms did much to put a stop to the vendetta, but the law is now repealed with the result that the number of murders is on the increase. In Kentucky also many murders have been caused by feuds of the vendetta class.

Veneer, beautifully grained or figured woods which are, owing to their cost, rarely used in the form of solid boards, but cut into thin slices. Veneers are cut from almost all the finer woods, both native and foreign, including mahogany, birch, rosewood, ebony, satinwood, cedar, tulipwood, Hungarian ash, sycamore, and others, veneers being used on pianos and other musical instruments, on furniture, doors, and so on. Some veneers are sawed and some are cut from the log by means of a knife.

Veneers may be made of almost any degree of thinness, as, say, one one-hundredth of an inch. They are most commonly made for the many uses to which they are put, in sawed veneers of a thickness of 26 to 30 to the inch, and in cut veneers of a thickness averaging 30 to the inch.

Venetian Architecture, a variety of the Gothic style, of which examples are found mainly in palaces which form a class apart among buildings constructed in the Italian Gothic style. In these palaces the arches of the windows and halls rest upon shafts, and terminate in intricate designs of open tracery work, as in the case of the celebrated Palace of the Doges. This style of ornamentation is employed both in churches and palaces.

Venetian School, a school of painting which arose and declined in the 16th century, and of which Titian (1477–1576) is considered the founder. Among its other masters were Giorgione (1477–1511), Tintoretto (1512–1594), and Paul Veronese (1528–1581). The distinguishing characteristics of this school were a mastery of color and a consummate knowledge of chiaro-oscuro.

Venezuela, a republic in the N. W. part of South America; bounded on the N. by the Caribbean Sea; on the W. by the United States of Colombia; on the S. by Brazil and on the E. by British Guiana.

The present distribution, according to the constitution of June 13, 1914, is into 20 States, a Federal district, and 2 territories. The area of the country claimed and occupied by Venezuela is 393,874 square miles; pop. (1927) 3,053,497. The capital is Caracas; pop. (1927) 135,253.

The coast line extending from E. to W.—from the delta of the Orinoco to

the boundary of the United States of Colombia — is 1,584 miles in length. Venezuela comprises the plains of the Orinoco basin, in continuation of the Amazon valley around the mountains of Guiana, partly separated from the Caribbean Sea by the N. E. range of the Andes. The mountain system of the Andes extends N. and E. into Venezuela from Colombia. Between the N. and E. ranges is the low country of Lake Maracaibo basin. The country E. of this basin is an extensive mountain tract, some of the peaks reaching above the limit of perpetual snow. These mountains extend along the N. coast, in a double range, having fertile valleys between. There are other mountain ranges in the S. and E.

The climate is tropical, and very hot in the valleys, the regions of the Lower Maracaibo basin being the hottest found on the W. continent. Above an altitude of 2,000 feet the climate becomes temperate, and cold above 7,000 feet. Much of the mountainous and plateau country has an elevation between these altitudes.

Large regions of Venezuela, especially in the S. W. comprising the Upper Orinoco basin and plains, are still unexplored, much of the country being densely covered with forests, penetrable only with great difficulty. Fully one-half of Venezuela is unbroken forest. These forests abound in wild animals, insects, birds, and reptiles. There are many species of monkeys, all the varieties of South American Felidæ, tapirs, deer, ant eaters, the spectacled bear, the cabaiai sloths, etc. Aquatic birds in enormous flocks are found in the swamps, lakes, and rivers. Tortoises are plentiful, 50,000,000 eggs annually being taken for their oil. Manatees and porpoises ascend the Orinoco. The rivers, bays, and lakes abound in fish of many varieties.

Agriculture is the principal industry, but is mostly confined to the N. mountainous belt, where the greater part of the population is concentrated. The principal products are coffee, cacao, sugar cane, tobacco, maize, cotton, and tropical fruits. Wheat is cultivated in some of the higher plains. Indigenous products, cultivated or gathered, include the tonka bean, rubber, copal, sarsaparilla, cinchona, many beautiful cabinet woods, dyewoods, herbs, drugs, etc. The agricultural lands amount to about 135,000 square miles. Great herds of sheep, goats, and cattle are raised on the table-lands and mountain slopes.

Venezuela is rich in metals and other minerals. It is the greatest producer of petroleum in the world, in 1927 there was a total output of 62,817,088 barrels. In the same year there were 51,472 fine ounces of gold produced.

In the fiscal year 1927 the total imports had a value of $72,684,210, and the exports $88,724,210. The greatest amount of trade was carried on with the United Kingdom.

Gold is chiefly found in the Yuruari district, and petroleum in practically every section, asphalt in Lake Bermudez, copper at Aroa, coal at Coro and Naricul.

The chief ports are visited regularly by American, British, Dutch, French, German, Italian and Spanish shipping.

There are 12 lines of railroad, five of which are national, and the other seven of which are owned by foreign interests. The total length is 661 miles. There are 6,244 miles of telegraph lines, with 218 offices, handling 1,000,000 messages yearly. There are 359 Post Offices in the Republic.

On June 30, 1927, the Bank of Venezuela had a capital of $4,800,000, and the Bank of Caracas a capital of $1,200,000.

The President is elected by Congress for seven years, and under the Constitution is eligible for reëlection. The Congress consists of a Senate of 40 members and a Chamber of Deputies of one member for every 35,000 inhabitants, and one more for an excess of 15,000. The Cabinet is composed of seven ministers.

The E. coast of Venezuela was discovered by Columbus in 1498; Ojeda and Vespucci followed in 1499, and, entering Lake Maracaibo, they found an Indian village constructed on piles, to prevent the evil effects of inundation, and they named the place Venezuela, or Little Venice, a name which afterward spread to the whole coun-

try. The first settlement was made at Cumana in 1520 by the Spaniards, and Venezuela remained subject to Spain till it claimed independence in 1811. It then returned to allegiance to Spain, but again revolted in 1813, and, forming with New Granada and Ecuador the republic of Colombia, was declared independent in 1819. In 1830 Venezuela withdrew from the other members of the Free State founded by Simon Bolivar and declared itself a federal republic. The charter of fundamental laws dates from 1830, was amended in 1864 and 1881, and is quite similar to the Constitution of the United States of America, but permits in theory only more independence in local government.

Venezuelan Blockade, The. In the year 1902 and the early part of 1903 Venezuela was the world's storm center, owing to the sanguinary revolution which was fought out there, followed by the hostile operations of Great Britain, Germany, and Italy, on the Venezuelan coast. The revolution had its origin in the antagonism of the wealthy and aristocratic element of the republic to the President, Cipriani Castro, a man of humble Indian extraction, who by force of his native energy, persistence and courage, achieved the chief office of state. Broadly speaking, Castro was supported by the popular element, and his success in the field was largely due to Indian troops, who followed him from their mountain homes, and stood for him in good and ill fortune, while the mass of the citizens accepted matters quietly, hoping that Castro would gather about him, men who would assist in honestly directing affairs.

Matos, who was the wealthiest man in Venezuela, and who aspired to the Presidency himself, was the leader of the opposite party. Matos bought the British steamer, Ban Righ, turned her into a warship, loaded her with rapid-firing guns, thousands of rifles and large quantities of ammunition, named her the Bolivar, and started her for Venezuela. There an army was soon formed, and a fierce struggle began, which continued with varying fortune up to the decisive battle of La Victoria, in October, 1902. Up to that time Castro frequently got the worst of the conflict. The leanings of Germany, England and other European countries were favorable to Matos, and the United States government also, while not taking any stand officially, let it be understood that the success of the revolution would be agreeable to Washington. Castro, brought to bay, met the enemy under Mendoza at La Victoria, in early October, 1902, and a battle was begun which lasted for several days, which was signalized by desperate hand-to-hand fighting, and which resulted, on October 17, in the complete and final defeat of the rebels. At the head of his Indians, rifle in hand, Castro plunged into the fray, and the victory was largely due to his personal valor. Of the rebels 1,600 were killed and wounded, and of Castro's men 1,400. Matos fled to Curacao. The revolution was hardly over when Germany and England made a demand on Venezuela for the payment of certain claims. The German claims were largely meritorious. The Venezuelan railroads, steam and electric, were English or German; the harbor improvements, English; the breweries, German entirely; the cable, French; the telephone lines, English or American; the waterworks, Belgian; and three-fourths of the concessions for mining and products of the great forests, were owned in Europe.

As Castro had exhausted his resources he was unable to satisfy the demands made upon him. On December 9, 1902, the British and Germans seized the Venezuelan fleet, the Germans sinking in the night three of the gunboats which they had taken, giving as a reason for this action that the vessels were unseaworthy. Italy sent a cruiser to join in the hostile proceedings, and afterward ordered another vessel to assist in the blockade, which was enforced with the greatest harshness against Americans, while Dutch and British traders from the neighboring islands carried on with little guise of secrecy and entire immunity a blockade-running traffic. As the foreign trade with Venezuela is chiefly American, the interests of American merchants and shipowners were struck at by the blockade much more severely than those of Venezuela, where the people had ample means for subsistence from the products of

the soil, and could very easily exist for a considerable time without imported goods, which were also obtainable, however, by land and lake traffic with Colombia. The British, Germans and Italians seemed to take special satisfaction in breaking up the Venezuelan trade of the United States, and the American steamer Caracas, which had started from New York before the blockade, was turned away from La Guayra with half of its cargo still on board.

President Castro appealed to the American government to interfere in his behalf, and public opinion in the United States became greatly stirred over the highhanded course of the European governments concerned. It then transpired that before taking action Germany had consulted the Washington authorities, and had been told that the United States would not interfere, provided there should be no permanent occupation of Venezuelan territory. The American people were so aroused, however, that it was deemed best to have an American naval force near the scene of action to watch the further proceedings of the Europeans.

Venezuelans, probably for the first time since Bolivar went to the tomb, were almost united. Castro and his enemies, with a few exceptions, laid aside their mutual animosities and rallied for the defense of the country. A large and effective force was organized to repel invasion, but as the Europeans did not make any attempt at occupation, this army was not called on to prove its prowess. Puerto Cabello was shelled by the allies with but little resulting damage, and the only incident of the "war," of a really warlike character, was the brave defense by the Venezuelans of Fort San Carlos, near Maracaibo, which was bombarded by the Germans and a number of its defenders killed.

The European governments, apparently alarmed by the rising tide of American sentiment, appealed to President Roosevelt to act as arbitrator of their claims against Venezuela. The President, after consideration, declined, and suggested the Hague Arbitration Tribunal. The President also permitted Mr. Bowen, the American minister at Caracas, to act in behalf of Venezuela in coming to terms with the hostile powers. Mr. Bowen came to Washington, and after consultation with the representatives of Great Britain, Germany and Italy, terms of agreement were arrived at, and the blockade was withdrawn. Under the arrangement Venezuela sets aside 30 per cent. of the customs receipts at La Guayra and Puerto Cabello for the payment of the claims, after they shall all have been adjudicated, when pro rata payments are to begin and continue monthly. In case of failure on the part of Venezuela to carry out this arrangement Belgium is to send agents to take charge of the customs at the ports named, and distribute the funds as agreed. The arrangement leaves to Venezuela for the support of the government all the customs at the important port of Maracaibo, and other ports, besides the major share at La Guayra and Puerto Cabello. The question whether Great Britain, Germany, and Italy are to have precedence over other claimants in order of payment is to be decided by the Hague Tribunal. The full list of nations with claims against Venezuela includes the United States, Great Britain, France, Germany, Sweden and Norway, Italy, Belgium, The Netherlands, and Spain. Notwithstanding revolutions, Venezuela's debts are small compared with her resources, and with the obligations of some other Spanish-American states, and under proper financial administration a settlement of all just claims would not be burdensome to the republic. The people of Venezuela are weary of the everlasting burden of internecine strife and bloodshed, and they yearn for peace. See BOWEN, H. C.; CASTRO, C.; LOOMIS.

Venezuelan Boundary Dispute. In 1855 a crisis arose between Great Britain and Venezuela regarding the boundary line separating the latter country from British Guiana — a question which had been long in dispute. The controversy dated back to 1814, when Great Britain acquired by treaty with the Netherlands the provinces of Demerara, Essequibo, and Bernice. Venezuela originally claimed her limits to be those of the captaincy-general of 1810, but contented herself with claiming the line of the Essequi-

bo river as the true boundary. Great Britain apparently acquiesced till 1840, when she commissioned Sir R. Schomburgk to lay out the boundaries, which he proceeded to do by including a large area which had before been considered by Venezuela a portion of her domain, and to the possession of which by Great Britain a vigorous protest was entered. After much diplomatic negotiation the monuments set up by Schomburgk were removed by the order of Lord Aberdeen. Other boundaries were from time to time suggested, but none agreed on, till finally, in 1886, Great Britain returned to her contention of 1840, and claimed all the territory within the Schomburgk line. The controversy continued till 1894, when a Venezuelan force entered the disputed territory and raised the flag of the latter country at Yuruan. The following year the British police removed the flag, for which they were arrested but finally released, Great Britain setting up a demand for reparation somewhat in the nature of an ultimatum.

The United States became a party to the dispute by the act of Congress directing the President to urge Great Britain to submit to arbitration the question whether Venezuela was entitled to the territory between the Essequibo and the Orinoco. In his annual message to Congress, Dec. 3, 1895, President Cleveland called attention to the boundary controversy and the representations made by the United States government to that of Great Britain with a view of securing the submission of the dispute to arbitration. On the 17th he sent a special message to Congress, accompanied by the answer of the British government to the representations mentioned, and a recommendation that Congress authorize the appointment of a commission to determine the divisional line between Venezuela and British Guiana. The message created intense excitement throughout Europe and America. Both Houses of Congress passed a commission bill unanimously and indulged in much talk of war. Under the bill the President announced, Jan. 1, 1896, the appointment of the following commissioners: David J. Brewer, Associate-Justice of the United States Supreme Court; Richard H. Alvey, Chief-Justice of the Court of Appeals of the District of Columbia; Andrew D. White, ex-United States minister to Russia; Frederick R. Coudert; and Daniel C. Gilman, president of Johns Hopkins University. Subsequently the commission organized and chose Justice Brewer its president.

The commission invited the governments of Venezuela and Great Britain to formulate and present to it their respective cases in support of their claims. The invitation was complied with by both governments. Independently of these cases the commission gathered a great mass of evidence bearing on the claims, and continued its sittings till Feb. 27, 1897, when, Venezuela and Great Britain having signed a treaty providing for the submission of the claims to arbitration it considered its work at an end, made its report to the President, and terminated its existence. The treaty between Venezuela and Great Britain was signed in Washington, D. C., on Feb. 2, 1897, and provided for the appointment of an arbitration tribunal, to determine the boundary line, consisting of five jurists, the two on the part of Venezuela being Chief-Justice Fuller and Associate-Justice Brewer of the United States Supreme Court; the two on the part of Great Britain being the Rt. Hon. Baron Herschell and the Hon. Sir Richard Henn Collins; and the fifth to be selected by the four jurists nominated in the treaty, or, in the event of their failure to agree, by the King of Norway and Sweden, the fifth jurist to be the president of the tribunal. The treaty provided that the tribunal should sit in Paris, France. The tribunal was completed by the selection of Professor Maertens, a distinguished Russian jurist, Professor of International Law in the University of St. Petersburg, and legal writer, as the fifth member and president. The award of the tribunal, which was delivered Oct. 3, 1899, gave Great Britain the Schomburgk line, with the exception of Barima Point, at the mouth of the Orinoco, and a strip of territory between the Wenamu and Cuyuni rivers; but it was decided that the mouth of the Orinoco should be

open to the British, and both banks of a part of the Cuyuni, where the Schomburgk line had given them only one bank.

Venice, a celebrated city of Northeastern Italy, capital of the province of the same name, and of the former Venetian republic; near the N. extremity of the Adriatic, 70 miles W. of Trieste. The city is built entirely on piles driven into about 80 small islands situated in the shallow waters of the Bay of Venice, and known as the lagoons, a kind of lake shut out from the deeper water of the Adriatic Sea, by a ridge or long but interrupted belt of sand and earth called the Littorale, which extends about 2 miles from the shore, shutting in all the islands and lagoons from the Adriatic Sea. A modern viaduct, supported on 222 arches, part of the Verona and Venice railway, has lately united the continent with the Littorale or protecting beach of the city. The 80 islands on which the city is built are separated from each other by narrow channels, which serve the purpose of thoroughfares, being constantly traversed by gondolas, light river boats, answering the purpose of cabs and omnibuses, and depositing passengers at any house or building at which they may desire to alight. The whole series of islands are connected with each other by means of 450 bridges. Some of the islands are large enough to have what may be regarded as two or three short streets with intersecting lanes or alleys, but in general they only present blocks of buildings, having river fronts, according to the direction of the canal, or the water frontage of the isle. The longest and most important street in Venice, the Merceria, is only 15 feet wide; carriages and horses are unknown in Venice, the gondola being the universal means of transit for those going from shop to shop or house to house.

Venice is nearly 8 miles in circumference, contains about 28,000 houses, and is divided into two parts by the Grand Canal, or Canal Grande. Over this canal there is only one bridge, that of the Rialto, the most magnificent bridge in Venice, consisting of a single arch 90 feet in span and 24 feet in height, built of marble in 1500. Two ranges of shops divide its upper surface into three narrow parallel streets. Venice is regarded as one of the finest cities in Europe, and was for many centuries the capital of the first maritime and commercial state in the world. It consequently contains proportionally a larger number of public buildings and palatial residences than any other city in Europe. Few cities in Italy are richer in works of pictorial art than Venice; some of the masterpieces of Titian, Tintoretto, Paul Veronese, and the other great chiefs of the Venetian school, are to be found in all the churches of this extraordinary city. The library (a fine marble structure, containing 120,000 volumes and 10,000 MSS.), the museum, and cabinet of curiosities of St. Mark's, are regarded as the finest in Europe. The arsenal and dockyard are esteemed as worthy objects of attraction; the latter, in the palmy days of Venice, contained 40 line-of-battle ships, 12 of them three-deckers, with arms for 150,000 men, 4,000 pieces of ordnance, and an immense amount of naval and military stores, with provisions and every requisite to maintain its reputation as one of the first commercial and maritime states in the world. For many centuries, in the Middle Ages, Venice had the monopoly of all the glass sold to Europe; but this has long since passed away, and its chief trade is now confined to the manufacture of mirrors, jewelry, artificial pearls, silks, velvets and porcelain. The foundation of Venice was laid in 421, as a place of refuge during the invasion of Italy by Attila. The prosperity and power of Venice began with the dawn of the 9th century. In the reign of Giovanni, in 1620, gold was first coined in Venice, the coin from the ducal dignity of the prince being called a ducat. Venice at this time was at the height of its glory as the first maritime and commercial state in Europe, as the most prosperous of nations, and as a leading military and political power. The greatest part of the 15th century was passed in repeated wars with the Turks, who captured many of her Greek and Ionian islands, especially Cyprus, and large portions of Dalmatia. When the commerce of Venice became annihilated by the discovery of the route to India by the

Cape, petty quarrels and political jealousies occupied the Venetians, instead of commerce and dominion. From this time the prestige of Venice declined, and her power gradually sank as a state till, on the occupation of Italy by the armies of the French Republic, Venice — after an independent existence of 1,300 years — without striking a blow became a part of Napoleon's Cisalpine republic, and afterward of the Italian kingdom. At the Congress of Vienna, 1815, Venice was annexed to Austria. The city and territory were ceded to, and incorporated with, the kingdom of Italy in 1866. Pop. (1923) commune, 1,857,400.

Venizelos, Eleutherios, a Greek statesman; born in Crete in 1864; became a lawyer, early entered the Cretan struggle for freedom; was counsellor of Prince George when the High Commissioner of the Great Powers; was appointed Prime Minister in 1910; reinstated Crown Prince Constantine, later King, as commander-in-chief of the army; and made an effective reorganization of the army and navy. He held office but a short time, and when, on Sept. 1, 1916, a revolution against Constantine occurred in Crete, he returned there, and organized a provisional government. From this movement and the demands of the protecting Powers came the abdication of the King, and the virtual declaration of war against the Central Powers in July, 1917.

Ventilation, the artificial renewal of the air within a confined space, such as a mine or the interior of a building or vessel. This is required when the air is subject to contamination, as by products of respiration or by admixture with other gases. In general there are two leading methods of ventilation: (a) causing air to go out at the outlet, and allowing air to find its way in by any inlet (vacuum method); (b) forcing air in and allowing it to find its way out (plenum method). The advantage of the second method is that it is known whence the air comes which is forced in, and the access of air from other sources tends to be prevented by the excess of pressure within the confined space.

Ventricles of the Heart, two of the four cavities into which the heart is divided. They are called the right and the left ventricles. The right or anterior ventricle occupies most of the anterior surface of the right border and a smaller part of the posterior surface. The upper and left angle, called the arterial cone or infundibulum, is prolonged in a conical form to the commencement of the pulmonary artery. The muscular wall of the right ventricle is thickest at the base, and becomes thinner toward the apex. At its base are two orifices: The auriculo-ventricular orifice, protected by the tricuspid valve, and that of the pulmonary artery, protected by the semi-lunar or sigmoid valves. The left or posterior ventricle occupies the left border of the heart, about a third of its extent appearing on the anterior surface, the rest being visible behind. It is longer and narrower than the right ventricle, and oval in cross section. Its walls, except near the apex, are three times as thick as those of the right ventricle. Its two orifices are very close together. One is the left auricular, the other the aortic opening, the former protected by the bicuspid or mitral, the latter by another semilunar or sigmoid valve, while the two are separated only by the attachment of the anterior segment of the mitral valve. The ventricles receive the blood from the auricles, and transmit it to the lungs and through the aorta to the body generally.

Ventriloquism, the art of speaking in such a way as to cause a hearer to believe that the sound comes, not from the person speaking, but from a different source. The name originated from the erroneous supposition that the sounds uttered were formed in the belly, whereas practice alone is necessary to carry this act of illusion to a high degree of perfection. The sounds are formed by the ordinary vocal organs — the larynx, the palate, the tongue, the lips, etc. The art of the ventriloquist consists merely in this: After drawing a long breath he breathes it out slowly and gradually, dexterously modifying and diminishing the sound of the voice; besides this he moves his lips as little as possible, and by various contrivances diverts the attention of his auditors. This art was known to the ancient Greeks.

Venus, in Roman mythology, the goddess of beauty and love, and more especially of sensual love, her principal seats being the island of Cyprus and Cythera. The Romans regarded her as the progenitress of their nation, which was fabled to have sprung from Æneas, the offspring of her union with the Trojan Anchises. She was married to Vulcan, but was not remarkable for fidelity to her husband, and her amour with Adonis has been celebrated by classic poets and by Shakespeare. The rose, myrtle, and apple were sacred to her; among birds, the dove, swan, and sparrow were her favorites. She is generally represented with her son Cupid in a chariot drawn by doves, or, at other times, by swans or sparrows. Among the most famous statues of Venus are the Venus of Cnidus, by Praxiteles (of which the Venus de Medici, found at Tivoli, is supposed to be a copy), the Venus of Capua, and the Venus of Milo or Milos, found in the island of Milos.

Venus, in astronomy, the second of the known inferior planets, if the arrangement be made according to their relative distances from the sun. With the exception of the moon Venus is nearest of all the heavenly bodies to the earth, and, when near its extreme E. or W. elongation, is much brighter than even the largest of the fixed stars. It stands first in this respect also of all the planets, the nearest approach to it being that made at certain times by Jupiter. When Venus is at its maximum of brightness, it can sometimes be seen by the naked eye in sunlight within an hour of noon. Its comparative nearness to the sun causes it to be for six months a morning and for the other six months an evening star. Its diameter is about 7,826 miles, or about 93 miles less than that of the earth.

Vera Cruz, a State of Mexico and its principal city. The former borders on the Gulf of Mexico; has an area of 29,201 square miles, and an estimated population (1923) of 1,400,000; and is chiefly engaged in agriculture, the leading products being tobacco, coffee, cotton, sugar, and vanilla.

The city is the principal part of the republic; on the E. coast, in a low, unhealthy plain, backed by drifting sandhills; 263 miles E. of the City of Mexico. There is no harbor, but only an open roadstead between the city and the island castle of San Juan de Ulua, which, with two shore batteries, defends the port. The streets are wide and straight, with numerous squares, and low, picturesque houses of various colors. The chief buildings are the cathedral, custom house, and casino. Most of the commerce is in the hands of foreigners. The old town was founded by Cortez in 1520 on the spot where he had landed the year before; the new one dates from 1580. The royal forces held out in the castle till November, 1825. The castle capitulated to the French in 1838, and to General Scott in 1847; and during the French occupation the city was the base of supplies from 1862 to 1867. On April 21, 1914, American marines and sailors were landed here, and occupied the custom house and part of the city after sharp fighting; on Nov. 23 American troops were withdrawn; and on March 9, 1915, U. S. warships were ordered here to protect American property and lives. See APPENDIX: *Mexican Campaign.* Pop. (1923) Est. 55,000.

Veragua, Duke of, a title conferred on the lineal descendants of Christopher Columbus. It was first borne by Luis Columbus in 1536. From him it passed to Diego Columbus, the great-grandson of the famous discoverer. He died childless in 1578, and the male line of Columbus came to an end. A lawsuit for the succession to the title followed, and after 30 years was settled in favor of the descendants of Isabel, sister of Luis Columbus. This line coming to an end in 1733, the title was, after more litigation, settled on the descendants of Francesca, sister of the Diego Columbus who died in 1578. The Duke of Veragua, 13th in direct descent from Christopher Columbus, was born in Madrid, Spain, in 1837. In 1893, with his wife, he visited the United States on the invitation of the government, and witnessed the opening ceremonies of the Columbian Exposition. He was everywhere received with honors as a representative of the family. He died in 1910.

Verbena, a genus of plants consisting of numerous species of herbs or shrubs which inhabit the tropical and sub-tropical parts of the world; most numerous in America, more rare in Asia and Africa. The genus is more remarkable for the beauty of a number of the species, which under cultivation have given origin to numerous varieties greatly prized for their brilliantly colored flowers, than for other virtues, though formerly the English species was credited with potent medicinal qualities.

Verdi, Giuseppe, an Italian composer; born in Roncole near Busseto, Italy, Oct. 9, 1813. His first opera, produced in Milan, "Oberto, Conte di S. Bonifacio," is chiefly indebted to Bellini. "Nabucodonosor" (1842) was his first hit, and in the next year "I Lombardi" was even more successful — partly owing to the revolutionary feeling which in no small degree was to help him to his future high position. "Ernani," produced at Venice in 1844, also scored a success, owing to the republican sentiment in the libretto, which was adapted from Victor Hugo's "Hernani." Only with his 16th opera did Verdi win the supremacy when there were no longer any living competitors; and "Rigoletto" (1851), "Il Trovatore," and "La Traviata" (1853) must be called the best, as they are the last of the Italian opera school. When "Aida" was produced at Cairo (1871) it was at once acknowledged that a revolution had taken place in Verdi's mind and method, which 16 years later exhibited still greater results, when "Othello" was produced at Milan in 1887. A Requiem Mass (1874) is his only important non-operatic work. He died Jan. 27, 1901.

Verdun, a fortified French town, Department of Meuse; 35 miles W. of Metz. It has 11 forts, a cathedral, and manufactures of iron, liquors, sweetmeats, leather, and beer. In 843 a famous treaty was made here between the Emperor Lothaire and his brother Ludwig the German, by which the Frankish empire was divided in three. The fortress has been often besieged; as it was in 1870 by the Germans for six weeks, when it capitulated. It was the last place held by Germany, given up only in September, 1873. In the World War Germany entered on a campaign against Verdun in January, 1916, and by Oct. 21, eight months to a day after the first German drive, the French had retaken all the ground within the old intrenched camp of Verdun which Germany had occupied in her months of advance excepting Vaux, which fell to the great French defense on Nov. 2, following. See APPENDIX: *World War.* Pop., commune, about 22,000.

Vereshtchagin, Vassili, a celebrated Russian war painter; born at Tcherepovets, Novgorod, Oct. 26, 1842; killed in the blowing up of the "Petropavlovsk" at Port Arthur, during the Russo-Japanese War, April 13, 1904. He came into prominence with his pictures of the Russo-Turkish War of 1877-78, and sought to denounce warfare, by depicting its horrors with grim realism. Specimens of his work are in the Brooklyn Institute, New York city. He held repeated exhibitions in the United States, and a number of his works are in private possession here.

Vergennes, Charles Gravier, a French statesman; born in Dijon, France, Dec. 28, 1717. After a diplomatic career in Germany, Turkey, and Sweden, he became Louis XIV.'s minister of foreign affairs and merited the lasting gratitude of Americans by the energetic manner in which he assisted the United States in gaining independence. Died Feb. 13, 1787.

Vergil, or **Virgil** (Publius Vergilius Maro), Latin poet; born in Andes near Mantua, Oct. 15, 70 B. C. The name Vergilius is apparently Celtic, and in Vergil's Celtic blood modern critics have found the origin of his romantic and melancholy temper, and of the deep sense of natural beauty and the spiritual meaning of nature, in which he stands alone among Greek and Latin poets.

The boy was sent to school at Cremona and Milan, and at the age of 16 went to Rome and studied rhetoric and philosophy under the best teachers of the time.

In 37 B. C. the "Eclogues," a collection of 10 pastorals modelled on those of Theocritus, were published, and received with unexampled enthusiasm.

Soon afterward Vergil withdrew from Rome to Campania. The munificence of Mæcenas had placed him in easy and even affluent circumstances. He had a villa at Naples, and a country house near Nola, within easy reach of it; and he seems to have lived almost entirely in this neighborhood during the seven years in which he was engaged on the composition of the "Georgics," or "Art of Husbandry." This poem, which is in four books, and deals with tillage and pasturage, the cultivation of trees, especially the vine and olive, and the breeding of horses, cattle, and bees, appeared in 30 B. C., and confirmed Vergil's position as the foremost poet of the age. The remaining 11 years of his life were devoted to a larger and in some respects more uncongenial task, undertaken at the urgent and repeated request of the emperor, the composition of a great national epic. During these years he lived a secluded life, chiefly in Campania and Sicily; he seems also to have traveled in Greece, and to have paid occasional visits to Rome, where he had a house in the fashionable quarter on the Esquiline. The subject he chose was the story of Æneas, the Trojan, the legendary founder of the Roman nation and of the Julian family, from the fall of Troy to his arrival in Italy, his wars and alliances with the native Italian races, and his final establishment in his new kingdom. By 19 B. C. the "Æneid" was practically completed, but Vergil had set apart three years more for its final revision. In the summer of that year he left Italy with the intention of traveling in Greece and Asia; but at Athens he fell ill, and returned only to die at Brundusium a few days after landing, on Sept. 21. He had almost completed his 51st year. In his last illness he expressed a wish to burn the "Æneid," and he left directions to that effect in his will. By the command of Augustus these directions were disobeyed, and it was published as we now possess it. At his own wish he was buried at Naples, on the road to Pozzuoli, his tomb for many hundred years after being worshiped as a sacred place.

The reputation of Vergil from his own time till now is probably unparalleled in its continuity. His works were established classics even in his lifetime, and soon after his death had become, as they still remain, the school books of Western Europe.

Vermicelli, an Italian mixture prepared of flour, cheese, yolks of eggs, sugar, and saffron, manufactured in the form of long slender tubes or threads, and so named from their worm-like appearance. Vermicelli differs from macaroni only in being made in smaller tubes. Both are prepared in perfection at Naples, where they are a favorite dish with all classes, and form a principal item in the food of the population. Vermicelli is used in soups, broths, etc.

Vermiform Appendage, or **Vermiform Appendix,** so far as is known, is peculiar to man, certain of the higher apes, and the wombat. The vermiform appendage in the human species hangs from the cæcum, which is the point of junction between the smaller intestines and the ascending colon. In size and shape it resembles a man's little finger. Its lining membrane secretes a mucus which in health constantly wells up into the lower end of the colon where the ileocæcal valve opens, and this mucus acts as a lubricant to the valve. Sometimes the appendix becomes ingested with fæcal matter and serious and even fatal inflammation results.

Vermont, a State in the North Atlantic Division of the North American Union; bounded by Quebec, New Hampshire, Massachusetts, and New York; admitted to the Union, March 4, 1791; number of counties, 14; capital, Montpelier; area, 9,564 square miles; pop. (1920) 352,428; (1930) 359,092.

The surface of the State is mountainous, being traversed from N. to S. by the Green Mountains, which culminate in Mansfield Mountain, in the N. W. with an altitude of 4,300 feet. The State is drained in the E. by the affluents of the Connecticut river, which forms its entire E. boundary line, and in the W. by those rivers entering Lake Champlain, which forms over one-half its W. boundary. The rivers are not navigable, but afford excellent water power. There are numerous small lakes.

The State is famous for its marbles. They occur in many localities, especially in Bennington and Rutland counties, and are found in many colors. Iron, silver, gold, galena, and zinc occur in small deposits, and other mineral products are amethysts, feldspar, mica, chalcedony, jasper, garnets, tourmaline, asbestos, stone, slate, talc, and lime.

In 1927 the value of all farm property was estimated to be over 200,000,000. In the year 1929 the crops produced were as follows: hay, 1,542,000 tons, potatoes, 2,850,000 bus., corn, 3,608,000 bus., oats, 1,780,000 bus., apples, 1,544,000 bus., barley, 210,000 bus. There were also produced, 1,083,000 gal. of maple sirup.

The extensive water power, timber land and stone quarries of Vermont give it a prominent place among manufacturing states. In 1927 it was reported that there were 880 manufacturing plants employing 26,241 wage earners, paying $32,205,000 for wages, and $69,957,000 for raw materials and yielding products having a combined value of $134,030,000.

In 1928 there were 64,529 pupils enrolled in public elementary schools under 2,946 teachers. For higher education there were 80 public high schools with 478 teachers and 10,505 pupils, besides 4 colleges, universities and technical schools.

The judiciary consists of a Supreme Court of five judges, a Court of Chancery, County and Probate Courts and local courts presided over by justices of the peace. The judges of the Supreme Court are elected by the General Assembly for two years, all others by the people.

The governor is elected for a term of two years and receives a salary of $3,000 per annum. Legislative sessions are held biennially and are unlimited in length. The Legislature has 30 members in the Senate and 229 in the House. There are 2 Representatives in Congress.

The first settlement by whites was made in 1724 on the site of the present town of Brattleboro. Immigration began to pour in in 1760-1768, during which period the soil had been claimed as part of the New Hampshire grant; whereupon a counter claim was put forth by the governor of New York, under virtue of the grants from Charles II. to his brother, the Duke of York. On an appeal to the English crown, jurisdiction over the new territory was decided in favor of New York. This was the precursor of an armed strife which continued for 10 years between the New York authorities and the Vermont settlers under the leadership of Ethan Allen and others. This state of things was partially interrupted by the outbreak of the Revolutionary War. In 1777 Vermont declared her independence, and sought admission into the National Confederation. Difficulties intervened, however, and it was not till 1791 that she was admitted into the Union; having previously bought off the claims of New York with the sum of $30,000. Though not at the time a member of the confederated colonies, Vermont had played a distinguished part in the war of independence, and her "Green Mountain Boys" participated in some of the hardest fought battles of the war. In the War of 1812, the Vermonters added fresh laurels to their military record. During the Civil War Vermont furnished more than her quota of men, sending more than one-tenth of the whole population.

Vermont, University of, a coeducational, non-sectarian institution in Burlington, Vt.; founded in 1791.

Verne, Jules, a French novelist; born in Nantes, France, Feb. 8, 1828. He studied law for some time, but afterward began writing short pieces for the stage. In 1863 he published "Five Weeks in a Balloon," and the vein of the marvelous, tinged with a quasi-scientific truthfulness, was worked by him with great success. His more popular works are: "Twenty Thousand Leagues under the Sea," "From the Earth to the Moon," "Across Africa in a Balloon," "Michel Strogoff," "To the Center of the Earth," "Round the World in Eighty Days," "The Mysterious Island." Died at Amiens, France, March 24, 1905.

Veronese, Paul (Paolo), the name by which Paolo Caliari (or Cagliari), an Italian artist of the Venetian school, is usually known, from his having been born at Verona, probably in

1528. The most celebrated of the works of this great artist—many of them very large—is the "Marriage Feast at Cana of Galilee," now in the Louvre at Paris; it is 20 feet high, and 30 in length, and contains 120 figures, many of them portraits of contemporaries, and the details much more 16th-century Italian than ancient Jewish. He died in Venice, April 19, 1588.

Verona, an ancient city of Northern Italy; capital of the Province of the same name; on both banks of the Adige; 72 miles W. by N. of Venice. It is a member of the famous Quadrilateral, having fortifications of unusual strength, and is interesting no less as a great center of historical associations than as a celebrated home of art, rich in classical and mediæval monuments of architecture. It is one of the oldest towns of Italy, its earliest inhabitants being either the Euganei or the Celtic Cenomani. It became a flourishing colony under the Romans. Here Decius defeated the Emperor Philip in 249, Constantine overthrew the army of Maxentius in 312, and Stilicho hurled back the hosts of Alaric in 403. The city suffered during the Ghibelline wars, but prospered under the Scaligers (1262–1387), who were succeeded by the Visconti and Carrara families. It escaped the tyranny of hereditary rulers by transferring its allegiance in 1405 to Venice, whose fortunes it subsequently shared. Pop. (1921) 92,413.

Veronica, a saint of the Roman Catholic Church, who, according to the legend, was one of the women who met our Lord on his way to Calvary. As he was sinking, overpowered by fatigue, under the weight of the cross, Veronica offered him her veil to wipe the sweat from his brow, when wondrous to tell, his divine features were miraculously impressed on the cloth, and remained as a permanent picture of the face of our Lord.

Versailles, a city of France; capital of the Department of Seine-et-Oise; on a plain 11 miles S. W. of Paris. A city long accustomed to find its sustenance in the expenditure of a luxurious court, it has few manufactures and little trade. The great attraction of Versailles is its palace. The site occupied by the palace is known to have been that of the ancient priory of St. Julien. Louis XIV. devoted enormous sums to its reconstruction, under the care of Mansard. Here was signed in 1783 the peace of Versailles between England and the United States. From the middle of September, 1870, till the conclusion of peace in 1871 Versailles was the center of all the operations of the Germans. On Sept. 20 King William and the Crown Prince entered the city, and there, on Jan. 18, 1871, the former was proclaimed Emperor of Germany. On Jan. 28 the capitulation of Paris was signed in Versailles. Here was held the Peace Conference following the World War. The Treaty of Peace made by the allied countries with Germany was signed here on June 28, 1919. Pop. (1926) 68,575.

Vertebra, in comparative anatomy, one of the bony segments of which the spine, or backbone, consists. The fundamental element of each vertebra is the body or centrum, from the surface of which spring two bony arches, called the neural arches, or neurapophyses, because they form with the body the neural canal, which incloses the spinal cord. From the point of junction there is usually developed a spine, called the spinous process, or neural spine, rudimentary in the atlas or first cervical vertebra. From the neural arches are also developed the articular process or zygapophyses, which aid the centra in uniting the vertebræ to each other. From the sides of the body proceed the transverse processes. The number of vertebræ varies greatly in different animals.

Vespasian, Titus Flavius Vespasianus, a Roman emperor; born of a poor family in the country of the Sabines A. D. 9. He served in the Roman armies, gradually rising to distinction, and in 66 was charged by Nero with the conduct of the Jewish war. He was still engaged in it when Nero died, and while the civil war was going on between Otho and Vitellius, Vespasian was proclaimed emperor, A. D. 69. The Jewish war ended in 70, and the next year Vespasian and Titus had a joint triumph. Vespasian died, A. D. 79, leaving two sons, Titus and Domitianus, who both became emperors.

Vespucci, Amerigo, or **Americus Vespucius,** an Italian navigator, after whom the continent of America is named; born in Florence, 1451. He made two voyages to America, in 1499, and the following year, exploring on the first voyage part of the mainland of South America. The maps detailing his explorations gave him great fame, and it is understood that, without any initiative on his part, his name was applied by mapmakers to the new continent. He died in 1512.

Vest, George Graham, an American statesman; born in Frankfort, Ky., Dec. 6, 1830; was graduated at Center College, Ky., in 1848, and at the Law Department of Transylvania University, Ky., in 1853; settled in Missouri in the latter year and there began the practice of law; was a member of the Confederate Congress for three years; and was elected to the United States Senate in 1879, 1885, 1891, and 1897. He died Aug. 9, 1904.

Vesta, an ancient goddess, called Hestia by the Greeks. According to the traditions of that people she was a virgin divinity, and watched over the fire that burned on the household hearth, which was looked on as her shrine. Something sacred attached to this part of the house. It was the family altar; here suppliants took refuge; on it oaths were sworn. Each town had its public fire, which was left continually burning in the Prytaneum; and when a band of colonists went forth from the city, they carried fire lighted at the common hearth with them. At Rome it was believed that Æneas had brought in this manner the sacred fire from Troy. It was preserved in a temple of circular shape with vaulted roof, which stood on the Forum. The sacred fire therein was tended by six priestesses who were called Vestales. They were virgins like the goddess whom they served. They performed several important functions in the State religion of Rome. They assisted at all great public rites, and were present at such religious transactions as the consecration of temples.

Vesta, in astronomy, the name of the fourth asteroid, discovered by Olbers at Bremen, March 29, 1807, his second and last discovery among the asteroids. It is the brightest among the small planets, sometimes being visible to the naked eye.

Vestibule Trains, railroad cars provided with inclosed and connected platforms. The expedient of inclosing, or as it has been termed, the vestibuling of, car platforms for the comfort and convenience of passengers having occasion to pass from car to car while a train is in motion, has been in daily use for some years.

Vestments, Sacred. The use by the priesthood of a distinctive costume in public worship formed a part not only of the Jewish, but of almost all the ancient religions. Generally speaking, in the Christian church the sacred vestments represent the original costume of Rome and the East in the first centuries, retained unaltered by the clergy, whereas in the everyday world the costume varied in fashion, in material, in color from year to year. There seems little room for doubting that from a very early time Christian ministers employed some distinctive dress in public worship; and Catholic writers even find traces in the beginning of the 5th century of the practice of blessing the vestments which were destined for the public services of the Church. The vestments used in the celebration of mass by priests of the Roman Catholic Church are the amice (originally worn over the head); the alb; the girdle, a linen cord tied round the waist, and confining the folds of the alb; the maniple, a narrow strip of embroidered silk, worn pendent from the arm; the stole, and the chasuble.

Vestry, a room adjoining a church where the vestments of the clergy are kept. Hence the place of meeting of those having the charge of parochial affairs, and collectively the persons themselves to whom these affairs are intrusted. In England, the minister, church wardens, and chief men of a parish generally constitute a vestry, and the minister, whether rector, vicar, or perpetual curate, is ex-officio chairman. The powers of the vestry include the expenditure of the parish funds, the repairing or alteration of churches or chapels, and the appointment of certain parish officers.

Vesuvius, a volcanic mountain in the Bay of Naples; supposed to have been heaved up from the submarine

level where it was formed. Besides the shells which indicate its sea origin, it contains erratic blocks of limestone from the higher Apennine offshoot, Monte Somma, which, in an irregular semicircle, surrounds it on the N. and E. The latter was the seat of volcanic activity long before Vesuvius, which first (A. D. 63) became convulsed by earthquakes, repeated at intervals till 79, in which year occurred its earliest known eruption. This was followed by others, of which the more memorable are that in 472, when its ashes alighted in Constantinople; in 512, when they were wafted to Tripoli; in 1036; and in 1500; after which ensued a period of inaction, broken in December, 1631, by a destructive outbreak which denuded the mountain of the forest growth with which it had become clothed. The 18th century witnessed many of its eruptions, the most remarkable being that of 1793, when a lava stream 12 to 40 feet thick swept over Torre del Greco and penetrated the sea to a distance of 380 feet, by which time its volume was 1,204 feet wide and 15 feet high. This stream was so liquid that to leave the crater and enter the sea — a journey of 4 miles — took only six hours.

Another memorable outbreak was that of 1822, when the so-called "smoke" from the crater rose to a height of 10,000 feet, emitting flashes of lightning, raining torrents of hot water, and flooding the villages of S. Sebastiano and Massa. In 1855 occurred a terrible eruption, in which the summit of the cone discharged a lava stream which ravaged the fertile and highly cultivated region below. On Dec. 8, 1861, Torre del Greco suffered severely from another visitation, surpassed in turn by that of 1871–1872, when the sudden emission of lava from a crater of 1855 killed 20 spectators on the spot. S. Sebastiano and Massa were again greatly damaged, the cone threw up fragments of rock to a height of 4,000 feet, and the explosions were so loud that the whole countryside fled panic-stricken to Naples. The activity of the volcano, accompanied by distinct shocks of earthquake, lasted for a week. Vesuvius' observatory (1844) has acquired a European reputation from the meteorologist Melloni, and still more from his successor, Professor Palmieri, 1854-82, and Prof. Matteucci, who recorded the disastrous eruption of Apr., 1906, which destroyed Boseo, Reale, and other villages, with great loss of life. A cable railroad to the summit was opened in 1880.

Vetch, Fetch, Fitch, or **Tare,** terms variously used to indicate the fodder plant. This genus consists of about 100 species of climbing or diffuse herbs, distributed through temperate regions of the Northern Hemisphere and South America. It is one of the best fodder plants, but is only of one or two years' duration; it is important also for green manure, and as a companion crop with clovers. The practice of sowing it along with oats or barley is strongly recommended, insuring a greater bulk of produce, and preventing the crop from massing and rotting in wet weather.



COMMON VETCH.
a, seed pod.

Veterinary Art, the art which deals with the nature, causes, and treatment of the disorders of domestic animals. The first veterinary school was instituted in 1762 at Lyons.

Veterinary Medicine, that branch of medical science which embraces the treatment of diseased domestic animals, and the preservation of their health. It has evidently been practised from the earliest times; and there is every reason to suppose that the study of disease in the inferior

animals was applied, on comparative principles, to the treatment of disease in the human subject. For many centuries, the inferior animals alone were used for purposes of scientific dissection. Among the Greeks, the study of the diseases of domestic animals, and of the remedial agents applicable to such diseases, was directly applied to the practice of medicine, and it was compulsory on anyone making a new discovery regarding such curative agents, to divulge it for the public good. In the United States there were 13 schools of veterinary medicine in 1902. Nearly all are connected with well-known colleges and universities.

Veto, the power which one branch of the Legislature of a State has to negative the resolutions of another branch; or the right of the executive branch of government, such as president, governor, or king, to reject the bills, measures, or resolutions proposed by the Legislature. In the United States the President may veto all measures passed by Congress, but after that right has been exercised the rejected bill may become law by being passed by two-thirds of both of the Houses of Congress.

Viaduct, a term applied to extended constructions of arches or other artificial works to support a roadway, and thus distinguished from aqueducts, which are similar constructions to support waterways. One of the most modern constructions of this type is the recently completed viaduct across the Des Moines river in Iowa, the longest railway viaduct for its height in existence. Its length is 2,685 feet and height 185 feet. In point of total weight of metal employed in its construction it is fully three times as heavy as the next largest bridge of the kind in the world. The loftiest of these structures is on the line of the Antofagasta railway in Bolivia and is known as the Loa viaduct. The height of the tracks above the water is 336 feet. As the crossing is over a narrow canyon, the length is only 800 feet; the great depth, however, involves a proportionate width of the towers at the base, the extreme spread of the columns being 124 feet. The next in point of height is the Pecos viaduct, which carries the Southern Pacific railway over the Pecos river in Texas. This structure, which was built in 1892, is but little lower than the Bolivia viaduct, the height from water to rail being 321 feet, and the total length from abutment to abutment is 2,180 feet. Then comes the Kinzua viaduct, 302 feet above the water and 2,050 feet in length.

Viborg, a seaport of Finland, capital of the government of the same name, on an inlet of the Gulf of Finland, 74 miles N. W. of Petrograd. It is defended by detached forts; has an inner and outer harbor; ships large quantities of lumber, dairy products, and paper; is the seat of a Greek bishop; and was the capital of Karelia. Here, on Sept. 13, 1917, during the revolt in the Russian army, charged on Teutonic propagandists, loyal Russian soldiers were reported to have thrown ten of their officers, including two generals, into the river, and then shot at them till all but one disappeared. Pop. (1921) 30,748.

Vicar-Apostolic, in the Roman Church, a name formerly given to a bishop or archbishop, generally of some remote see, to whom the Pope delegated a portion of his authority, or to any ecclesiastic invested with episcopal jurisdiction.

Vicar-General, in the Roman Church, a clerk, usually (but not necessarily) in holy orders, and having a degree in canon law, appointed by a bishop to assist in the discharge of episcopal functions. In matters of jurisdiction the vicar-general is regarded as the ordinary, and there is no appeal from the former to the latter; but the vicar-general may not do any of those things which belong to the episcopal order.

Vice-President, one who holds office next to a president. The Vice-President of the United States is the second executive officer of the government, and is elected at the same time and in the same manner as the President. During the life and active health of the President, his executive functions are in abeyance, his duties being confined to the presidency of the Senate during the sessions of Congress. In the Senate he has no vote, except in case of a tie between the opposing parties

on a division of the House. Then, as is usual with parliamentary presiding officers, he has the casting vote. In the event of the death or incapability of the President, the Vice-President assumes the duties of the office. Several times in the history of the country has the Vice-President been called to the presidential chair — the first case being that of John Tyler, who succeeded William H. Harrison; then came Millard Fillmore, who succeeded Zachary Taylor; Andrew Johnson, who succeeded Abraham Lincoln; Chester A. Arthur, who succeeded James A. Garfield; Theodore Roosevelt, who succeeded William McKinley; and Calvin Coolidge, who succeeded Warren G. Harding.

Vicksburg, a city and county-seat of Warren co., Miss.; on the Mississippi river, about 1 mile S. of the mouth of the Yazoo. During the Civil War Vicksburg was strongly fortified by the Confederates, who several times repulsed land and naval attacks, but were forced to surrender to General Grant, July 4, 1863. In 1876 the river cut through a neck of land, making the city an island. Pop. (1930) 22,943.

Victor, Metta Victoria (Fuller), an American novelist; born near Erie, Pa., March 2, 1831. She published a story, "The Silver Lute," at 13; with her sister Frances, "Poems of Sentiment and Imagination"; alone but anonymously, "Fresh Leaves from Western Woods"; "The Senator's Son: A Plea for the Maine Law," which had a great circulation in England and America; and "Two Mormon Wives: A Life Story." She was the author of many other novels. She died in Hoboken, N. J., June 26, 1886.

Victor Amadeus II., Duke of Savoy, and first king of Sardinia; born in 1666; succeeded his father in the duchy, in 1675. He married Maria d'Orleans, niece of Louis XIV., but entered, nevertheless, on a tortuous policy, which involved him in a war with that monarch. Having acquired Sicily, he exchanged that kingdom, in 1717, for Sardinia, by treaty with the emperor. He died in 1732, two years after his abdication in favor of his son.

Victor Amadeus III., son of Charles Emmanuel III. of Sardinia; born in 1726, ascended the throne in 1773. He founded the Academy of Sciences at Turin, and exhibited the utmost anxiety for the welfare of his subjects. His hostility to the revolution in France provoked a contest with that country, in which his throne fell by the arms of Bonaparte. He died in 1796.

Victor Emmanuel I., King of Sardinia, second son of Victor Amadeus III.; born July 24, 1759. On the abdication of his brother, Charles Emmanuel IV., in 1802 he ascended the throne. He resided at Cagliari till 1814, as his territories were held by the French. His lands were restored by the Congress of Vienna, but his reactionary measures caused a revolution, and he abdicated March 13, 1821. He died in Moncalieri, Jan. 10, 1824.

Victor Emmanuel II., King of Italy, son of Charles Albert, King of Sardinia; born in Turin, Italy, March 14, 1820. While heir apparent, he fought in the campaign against the Austrians, which, terminating in the disastrous battle of Novara, caused his father to abdicate. He became king in 1849. After forming a close alliance with France, Victor Emmanuel, in 1859, again engaged in a war with Austria, which power, after being totally defeated in a short campaign, abandoned Lombardy to the Italians. In 1861, Victor Emmanuel was proclaimed King of Italy. In 1866, as the ally of Prussia, his army was defeated at Custozza, and his fleet at Lissa; but the success of the Prussians at Sadowa restored Venetia to Italy, the unification of which kingdom Victor Emmanuel completed in 1870, by making Rome his capital. The personal character of the first King of Italy bore a close resemblance to that of Henry IV., King of France, and, like that monarch, he possessed a bonhomie which rendered him popular among all classes of his subjects. Like Henry Quatre, too, Victor Emmanuel I. on several fields of battle displayed an almost reckless bravery; while his penchant for the fair sex was as notorious as that of his illustrious prototype. Victor Emmanuel died in Rome, Jan. 9, 1878, and was succeeded by his son Humbert.

Victor Emmanuel Ferdinand Mary Januarius, who succeeded to the throne of Italy as a result of the

assassination of King Humbert, his father, on July 29, 1900, was born on Nov. 11, 1869. He was married to Princess Helene, daughter of Nicholas, Prince of Montenegro, in 1896, in Rome.

Victoria, a city and capital of the Province of British Columbia, Canada; at the S. E. extremity of Vancouver Island, on the Strait of Fuca; 750 miles N. of San Francisco. It was founded by the Hudson Bay Company as a trading port in 1843; was long the headquarters of the Pacific sailing fleet; is an important mercantile and manufacturing place; and has large general trading interests as vessels from all parts of the world visit its harbor. Pop. (1930 Est.) 72,000.

Victoria, an original State in the Australian Commonwealth; bounded by New South Wales, the Pacific, the Indian Ocean, and South Australia; area, 87,884 square miles; pop. (1921) 1,531,529; capital, MELBOURNE (*q.v.*). It is the principal gold-producing State of Australia; has a large export trade in wool; is noted for its extensive vineyards and large production of wines; was colonized from Tasmania in 1834; and became a separate colony in 1851, during the great gold rush.

Victoria, late Queen of the United Kingdom of Great Britain and Ireland and Empress of India, only child of Edward, Duke of Kent (fourth son of George III.); born in Kensington Palace, May 24, 1819. Her mother, Victoria Maria Louisa (1786–1861), was the daughter of Francis, Duke of Saxe-Coburg, and sister of Leopold, King of the Belgians. Her first husband, the Prince of Leiningen, died in 1814; and in 1818 she married the Duke of Kent. The duke died in 1820, leaving his widow in charge of an infant daughter only eight months old, who had been baptized with the names of Alexandrina Victoria. She ascended the throne of the United Kingdom on the death of her uncle, William IV., on June 20, 1837; her uncle, the Duke of Cumberland, became King of Hanover, in virtue of the law which excluded females from that throne, and so the long connection between the crowns of England and Hanover was terminated. Victoria was proclaimed June 21, 1837, and crowned at Westminster, June 28, 1838. The young queen was married at St. James' Palace (Feb. 10, 1840) to Prince Albert, Prince of Saxe-Coburg and Gotha, and second son of the then reigning duke.

The death of the Prince-Consort in 1861 led his widow to seclude herself for several years from public life, but she never neglected any of her essential duties as queen. This policy entitled her to the distinction of having been the most constitutional monarch Great Britain had ever seen. In September, 1896, her reign had reached a point exceeding in length the reign of any other English sovereign. The celebration of the occasion was postponed till June, the anniversary of her accession to the throne, 60 years previous.



VICTORIA CROSS.

Queen Victoria had four sons and five daughters: the Princess Royal, Victoria, born 1840, married in 1858 to Frederick William, afterward Emperor of Germany; Albert Edward, Prince of Wales, born in 1841, and married in 1863 to Alexandra, daughter of the King of Denmark; Alice, born in 1843, married in 1862 to Prince Frederick-William, of Hesse, died in 1878; Alfred, born 1844, created Duke of Edinburgh 1866, married in 1874 to Marie, daughter of the Emperor of Russia, died in 1900; Helena, born 1846, married in 1866 to Prince Christian of Denmark; Louise,

born in 1848, married in 1871 to the Marquis of Lorne; Arthur, born in 1850, created Duke of Connaught 1874, married in 1879 to Princess Louise Marguerite of Prussia; Leopold, born 1853, created Duke of Albany in 1881, married to Princess Helena of Waldeck in 1882, died 1884; and Princess Beatrice, born 1857, married in 1885 to Prince Henry of Battenburg, died 1896. Queen Victoria died, after a short illness, Jan. 22, 1901.

Victoria Cross, an English naval and military decoration instituted by royal warrant, Jan. 29, 1856, and bestowed for "conspicuous bravery or devotion" to the country in the presence of the enemy. It is the most coveted of all British decorations, and is open to all officers and men of the regular, auxiliary, and reserve forces.

Victoria Land, or **South Victoria Land,** an Antarctic continental plateau, S. E. of New Zealand, extending between longitudes 160° to 170° E., from latitude 71° to the South Pole. It contains the volcanoes Erebus and Terror, discovered by Sir James Clark Ross in 1841-42. The highest point is Mount Melbourne, over 14,000 feet. Among recent expeditions which have added to the knowledge concerning the region, are the Belgica (1897-99); the Borchgrevink (1898-1900); and the Discovery (1901-04).

Victoria Nyanza, a great freshwater lake in East Central Africa, situated on the equator; area, over 30,000 square miles. It lies about 3,880 feet above sea-level. The lake is drained by the Nile, and its chief feeders are the Kaject, the Nzoia, the Shimiyu, and the Katonga. The lake, whose native name is Ukerewe, was discovered by Speke in 1858, visited by him and Grant in 1861–62, and subsequently partly explored by Stanley (1875), Mackay, Thompson, and others. Nearly all of German East Africa, the last German colony in Africa, was conquered during 1916 by a British expeditionary force under Lieut.-General Smuts, and during this campaign considerable fighting occurred along the shores of the lake.

Victoria Regia, named by Lindley after Queen Victoria, is the most magnificent of all known water lilies, and comes from a region in which it had been supposed that no Nymphæaceæ occurred. It was first discovered by the botanist Hænke in 1801. The rootstock is thick and fleshy, the leafstalks prickly, the leaf peltate, its margin circular, its diameter from 6 to 12 feet, the edge so turned up as to make the leaves floating in tranquil water look like a number of large trays. The leaves are green above, and covered with small bosses, below they are deep purple or violet; the undeveloped flowers are pyriform; the sepals four, each about seven inches long by four broad, purple externally, whitish internally; the petals numerous, in several rows, passing insensibly into stamens, fragrant, the outer ones white,



VICTORIA REGIA: EXPANDED BLOSSOM.

the inner ones roseate; stamens numerous, the outer fertile, the inner sterile; ovary many celled, cup-shaped above, with many small stigmas along its upper margin; fruit a prickly berry. A native of South American rivers, especially the tributaries of the Amazon. The seeds are said to be eatable, and the plant is in consequence called water maize by the natives of the region where it grows.

Vicuna, in zoölogy, a native of the most elevated localities of Bolivia and Northern Chile. It is very wild, and has resisted all attempts to reduce it to a state of domestication. It is the smallest species of the genus, standing only about 30 inches at the shoulder. It is extremely active and sure-footed, and is seldom taken alive. In habit it somewhat resembles the chamois, as it lives in herds in the regions of perpetual snow. The soft, silky fur is in much demand for mak-

ing delicate fabrics, and many thousands of these animals are slaughtered annually for the sake of the skins.



THE VICUNA.

Vidocq, Eugene Francois, a French detective; born in Arras, July 23, 1775. He was the son of a baker and was a thief from his childhood. He entered the army, was wounded and discharged, and began the life of a vagabond. In 1796 he committed forgery, for which he was sent to the galleys for eight years. Contriving to escape he joined a band of highwaymen, but was expelled by them after taking a solemn oath not to betray them. He at once went to Paris and disclosed their hiding place to the authorities. He then became a detective and with his comrades made some wonderful discoveries of burglaries, etc., which it was afterward claimed were committed by his own men. After his dismissal from the force in 1825, he engaged in some dishonest business operations. He wrote a history of his experiences, but, from his well-known lack of veracity, it was not considered authentic. He died April 28, 1857.

Viele, Egbert Ludovikus, an American civil engineer; born in Waterford, N. Y., June 17, 1825. As chief engineer he did some topographical work connected with the laying out of Central Park, New York city. During the Civil War he commanded the land forces at the capture of Port Royal; directed the investment of Fort Pulaski, Ga.; planned and led the march on and capture of Norfolk, Va., and was military governor of that city in 1862–1863. Subsequently he was member of Congress. Died 1902.

Vienna (German, Wien), the capital and largest city of the Austrian Republic; in Lower Austria, on the Danube canal, a branch of the Danube. The small river Wien flows through part of the city to join the canal. Vienna consists of the Inner City and eight districts or sections completely surrounding it — viz., Leopoldstadt, Landstrasse, Wieden, Margarethen, Mariahilf, Neubau, Alsergrund, and Favoriten. Immediately beyond the fortifications are nine populous suburbs included (since 1890) within the Vienna police district, which has a total area of 51 square miles; estimated population in (1923) 1,865,780.

Though Vienna contains buildings of the 14th and even of the 13th century, it is, in its present form, essentially a modern city; nearly all the most conspicuous and pretentious public buildings date from the later half of the 19th century. Modernity too is characteristic of the Viennese; they are sprightly, good-tempered, and pleasure-loving, fond of music, dancing, and the theater. The Inner City and the Ringstrasse are the handsomest and most fashionable quarters. In the former are the cathedral of St. Stephen (1300–1510), with a tower 450 feet in height; the Hofburg or imperial palace, a large and irregular pile of very various dates; and many palaces of the nobility. On one side or other of the Ringstrasse rise the Exchange; the University; the huge Gothic New Rathhaus, built at a cost of over $3,750,000; the Parliament House; the Supreme Law Courts; the Imperial Museums of Natural History and of Art (1872–1886), twin buildings on either side of the imposing monument of the Empress Maria Theresa (unveiled 1888); the imperial Opera House; the Academy of Art; the Austrian Museum of Art and Industry, etc.

Vienna is the chief industrial city in the empire. Machinery, scientific and musical instruments, artistic goods in bronze, leather, terra-cotta, porcelain, etc., bent-wood furniture, meer-

schaum pipes, etc., are among the noted manufactures of Vienna. As a center of trade and finance Vienna is no less important. Grain, flour, cattle, seeds, wines, and manufactured goods of all kinds are annually handled here to an immense aggregate value. Over $12,500,000 were spent in 1868–1881 in regulating the channel of the Danube so as to render the river navigable at all times, and a new mercantile quarter is gradually springing up between the canal and the main stream.

The chief local authority is the Gemeinderath, or city council (consisting of a burgomaster, two vice-burgomasters, and 120 councillors), which is assisted by local committees or councils in the various districts.

Vienna occupies the site of the Roman Vindobona, which was established in A. D. 14, as the successor of the Celtic settlement of Vindomina. The beginning of its present importance, however, dates only from the period of the Crusades, which directed a steady stream of traffic through it. The famous siege of Vienna by the Turks lasted from July 14 to Sept. 12, 1683, when it was relieved by John Sobieski of Poland. Since the downfall of the first Napoleon who brought Austria to his feet Vienna has grown rapidly. It still retains some ancient customs, and the annual throng to the graves of the dead on All Saints' day in 1903 is said to have been larger than in any former year.

Vigilance Committee, a term used to denote an unauthorized band of citizens organized to summarily punish crime, or prevent the commission of crime, in such instances as the civil and lawfully constituted authorities seem powerless to reach these desired results. The most noted vigilance committees in the history of the country were those formed in San Francisco, and contiguous territory in the Western States, and in New Orleans. In the earlier years of San Francisco the city was so overrun with the lawless element among the miners and adventurers that the administration of justice became in the hands of the constituted authorities but a travesty. It was then that the work of the vigilance committee, or Vigilantes, as they were styled, began. That work was short, sharp and terrible. Thieves and murderers were hanged on every side, while others were forced to seek safety in flight.

Viking, a rover or adventurer belonging to one of the bands of Northmen who scoured the European seas during the 8th, 9th, and 10th centuries.

Vilas, William Freeman, an American statesman; Postmaster-General in 1885–88; Secretary of the Interior in 1888–89; U. S. Senator from Wisconsin in 1891–97; died Aug. 27, 1908.

Villa, Francisco, a Mexican bandit whose rightful name is supposed by many to be DOROTEO ARANGO; born in San Juan del Rio, Durango, Mexico, in 1877. In early life he was a goatherd; at 20 he became a murderer and a cattle thief in the State of Chihuahua and had a price put on his head by President Diaz, who vainly sought his capture for ten years; and in 1910 he joined the Madero revolutionary party, receiving the rank of colonel and making his headquarters in Chihuahua City. Subsequently he allied himself with Huerta, but soon deserted him for Carranza, and in November, 1913, he captured Ciudad Juarez, defeated the Federal force in its vicinity, and made himself master of Chihuahua City. He developed remarkable strategic skill, and appeared to be successful in every move. In 1914 he deserted Carranza; on Feb. 3, 1915, announced his assumption of all political authority; and in 1916 practically made war against both Mexico and the United States. He was assassinated in 1923, see APPENDIX: *Mexican Campaign.*

Village Communities, the means by which many scholars contend that great part of Europe must have been brought into cultivation. A clan of settlers took a tract of land, built their huts thereon, and laid out common fields, which they cultivated in common as one family. The land was divided out every few years into family lots, but the whole continued to be cultivated by the community subject to the established customs as interpreted in the village council by the sense of the village elders. This may

still be seen in the villages of Russia, and even in some parts of England may still be traced the ancient boundaries.

Villard, Henry, an American capitalist; born in Spire, Germany, April 11, 1835; removed to the United States in 1853. In 1873, as agent for German stockholders, he bought the Oregon and California railroad and the Oregon Steamship companies. He formed the Oregon and Transcontinental Company, which afterward controlled the Oregon Railway and Navigation Company and the Northern Company. In 1881–1884 he was president of the Northern Pacific, and in 1889–1893 was chairman of the board of directors. He died Nov. 11, 1900.

Vilna, or **Wilna,** a town of Poland; capital of the Province of the same name; on the Vilia; 110 miles from the Prussian frontier, 436 miles S. W. of Petrograd; is picturesquely situated; contains numerous churches and convents, a governor's palace, a town hall, Greek and Roman Catholic cathedrals, and numerous educational establishments. There is a considerable trade in agricultural produce sent to Baltic ports. The town was united to Poland in 1447; suffered from the plague in 1588, a conflagration in 1610; was captured by the Russians in 1655, by the Swedes in 1702, and again by the Russians in 1788; and was annexed to Russia in 1795. In the World War it was occupied by the Germans, Sept. 18, 1915. Pop. (1922) Est. 146,000.

Vincennes, city and capital of Knox county, Ind.; on the Wabash river and the Baltimore & Ohio and other railroads; 50 miles N. of Evansville; is the distributing center of a large farming section; manufactures stoves, metal jewelry, iron pipe, brick, tile, cement, and plaster; and contains Vincennes University; Xavier Cathedral, and the Harrison homestead (1804). Pop. (1930) 17,564.

Vincent, Frank, an American traveler; born in Brooklyn, N. Y., April 2, 1848. He was the first man to make a systematic tour of the world covering 355,000 miles. He was a member of many geographical, ethnological, and archæological societies, and he received decorations from the kings of Burma, Cambodia, and Siam. He published "The Land of the White Elephant"; "Through and Through the Tropics"; "Actual Africa," etc. He died June 19, 1916.

Vincent, John Heyl, an American clergyman; born in Tuscaloosa, Ala., Feb. 23, 1832. In 1865 he established the "Sunday-School Quarterly," and in 1866 the "Sunday-School Teacher," which contained the lesson system, since become international. He was general secretary of the Methodist Sunday-School Union, and also of the Tract Society. In 1874, with Lewis Miller, of Akron, O., he established the Chautauqua Assembly, at Chautauqua Lake, N. Y., and became superintendent of instruction and chancellor. In 1888 he was elected a bishop of the Methodist Episcopal Church, with residence at Topeka, Kan.; and in 1900–04 was resident bishop in charge of European work of the Methodist Episcopal Church.

Vincent, Marvin Richardson, an American clergyman; born in Poughkeepsie, N. Y., Sept. 11, 1834. He became in 1888 Professor of New Testament Criticism at Union Theological Seminary, New York. With Charlton T. Lewis, he translated Johann Albrecht Bengel's "Gnomon of the New Testament." He afterward published, besides tracts, sermons, and review articles, "Amusement a Force in Christian Training"; "That Monster, the Higher Critic"; "A History of the Textual Criticism of the New Testament," etc.

Vincent, Strong, an American military officer; born in Waterford, Pa., June 17, 1837. Soon after the beginning of the Civil War he became lieutenant in the volunteer army; in September, 1861, was commissioned lieutenant-colonel of the 83d Pennsylvania Infantry; in October, 1862, was promoted colonel; and at Fredericksburg conducted a difficult retreat. He especially distinguished himself in the battle of Gettysburg, where he led his brigade up Little Round Top, and aided in checking an attempt of the Confederates to turn the left flank of the Union army. He was mortally shot July 7, 1863.

Vinci. See LEONARDO.

Vine, climbing shrubs, typical of the order Vitaceæ; they are found over a wide range of the Northern Hemisphere, the majority in temperate Asia, as well as in North America.

The European wine-yielding grape vine, is that which has the greatest economic and commercial importance. It is found on the shores of the Caspian Sea, and it grows wild throughout the lower Caucasus and in Armenia. The cultivation of this plant has occupied much of man's time and attention in all nations that have attained to any degree of civilization, from the very dawn of history, and it is spreading more rapidly at the present time than ever it did at any previous one.

The cultivation of the grape vine was introduced into England by the Romans. At the date of the Norman Conquest there is evidence that the vine was pretty extensively cultivated in the S. and S. W. of England for the production of wine till about the middle of the 18th century, when for this purpose its cultivation was given up, and it was grown for dessert purposes against walls and dwelling houses with considerable success, and continues to be so grown up to this date.

In the United States, especially California, the development of viticulture has been great and rapid. Early attempts were made to grow foreign grapes in the open air, but none of these met with success E. of the Rocky Mountains. Till the Californian grape industry developed, the growing of foreign grapes in the United States was under glass and for dessert purposes. Four native American vines (of some 10 found wild) are used for wine making, the most important being V. Lambrusca. The U. S. census of 1910 reported a total of 223,702,000 vines in the country, which produced in the previous year 2,571,065,000 lbs. of fruit, valued at $22,028,000. California alone raised 1,979,686,525 lbs., on 74,984 acres and 144,097,670 vines, value, $10,846,812. American vinestocks, as being less liable to suffer from the phylloxera, have with advantage been introduced into France for grafting on.

Vine Disease, in vegetable pathology, any disease attacking the vine. In general it forms a white and very delicate cottony layer upon the leaves, young shoots, and young grapes of the vine, which soon causes them to be covered by brown spots, and then become first indurated and finally destroyed. The fruit becomes abortive, or dwarfed and juiceless, and decay follows. There is a predisposition to the disease in certain states of the atmosphere. It first broke out in Kent, England, in 1845, whence it spread to the continent of Europe, to Madeira, and to the English vines introduced into America, though American vines themselves escaped. Soon after its appearance, Mr. Tucker, a gardener at Margate, England, was the first to try sulphur as a remedy. It is still the best known, and the fungus has been named after its human destroyer.

Vinegar, a solution of acetic acid, usually containing from 2 to 5 per cent. of acid, and minute proportions of various ethers and other substances according to the sources whence it is derived. It is a product of the oxidation of alcoholic solutions, and may consequently be prepared from any body containing alcohol, or capable of being transformed into that substance.

Vinland, the name given to the chief settlement of the early Norsemen in North America. It is undoubtedly represented in modern times by part of Massachusetts and Rhode Island. The first that saw it was Bjarne Herjulfson, who was driven thither by a storm in the summer of A. D. 986, when making a voyage from Iceland to Greenland, of which country his father, Herjulf, and Eric the Red, were the earliest colonists. But Bjarne did not touch the land, which was first visited by Leif the Lucky, a son of Eric the Red, about A. D. 1000. One part of the country he named Helluland ("Stoneland"); another Markland ("Woodland"), the modern Newfoundland and Nova Scotia; a German in his company having found the grape growing wild, as in his native country, Leif called the region Vinland. The natives from their dwarfish size they called skraelings. Two years after Leif's brother, Thorwald, arrived, and in the summer of 1003 led an expedition along the coast of New England S., but was killed the year following in an encounter with the na-

tives. The most famous of the Norse explorers, however, was Thorfinn Karlsefne, an Icelander, who had married Gudrid, widow of Thorstein, a son of Eric the Red, and who in 1007 sailed from Greenland to Vinland with a crew of 160 men, where he remained for three years, and then returned, after which no further attempts at colonization were made. Rafn, in his "Antiquitates Americanæ," published the first full collection of the evidence which proves the pre-Columbian colonization of America. Both he and Finn Magnusen labor to show that Columbus derived his first hints of a new world from the accounts of these old Icelandic expeditions. Finn Magnusen is believed to have established the fact that Columbus did visit Iceland in 1477, 15 years before he undertook his expedition across the Atlantic, and so may have heard something of the long-abandoned Vinland.

Vinton, Arthur Dudley, an American lawyer; born in Brooklyn, N. Y., Dec. 23, 1852; received an academic education and was graduated at the Columbia Law School in 1873. He was the inventor of the automatic railway signal, for which he received a patent in 1898. Afterward he served for a time as managing editor of the "North American Review," and then resumed the practice of law. He died in 1906.

Vinton, Francis, an American clergyman; born in Providence, R. I., Aug. 20, 1809; was graduated at the United States Military Academy in 1830. He resigned from the army in 1836, and studied at the General Theological Seminary; was ordained in the Protestant Episcopal Church in 1839; rector of several large churches, including Trinity Church, New York city, which he served in 1855–1872; defeated for bishop of New York in 1852 by one vote. He became Professor of Ecclesiastical Law and Polity at the General Theological Seminary in 1869. He died in Brooklyn, N. Y., Sept. 29, 1872.

Vinton, Francis Laurens, an American military officer; born in Fort Preble, Me., June 1, 1835; was graduated at the United States Military Academy in 1856. When the Civil War broke out he became a captain in the 16th United States Infantry, and later was made colonel of the 43d New York Volunteers. He participated in the Peninsular campaign; was wounded at the action before Fredericksburg; promoted Brigadier-General of volunteers in March, 1863; and was forced to resign in the following May owing to his wound. He was Professor of Engineering in Columbia College in 1864–1877. He died in Leadville, Col., Oct. 6, 1879.

Viol, in music, a stringed instrument a little larger than the violin; it was furnished with five or six strings, had a fretted finger board, and was played with a bow. The viol is found depicted in MSS. as early as the 11th century. In France, Germany, and Italy the number of the strings varied between three and six. The treble viol was somewhat larger than the violin, and the music for it was written in the treble clef; the mean (or tenor) viol was about the same length and breadth as the modern tenor violin, but was thicker in the body; its music was written in the C clef. The bass viol was much about the same size as the violoncello and the music for it was written in the bass clef.

Violet, in botany, low herbs, more rarely shrubs, with radical or alternate leaves or flowers. Known species 100; from temperate countries. Five of the most familiar are native in temperate America and Europe: the sweet, the hairy, Gerard's or the dog violet; and the pansy violet, pansy, or heart's-ease.

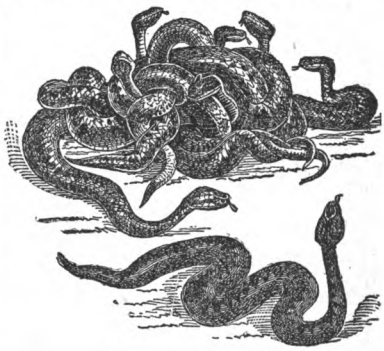
Violin (diminutive from viol), the smallest but most important of the stringed musical instruments played with the bow. Like other bow instruments now in use, it consists of a wooden sonorous chest, formed of two slightly arched surfaces, known as the back and belly, united by sides or ribs, and with a curve or hollow on each side in the middle of the length; a neck or finger-board attached to the chest; and strings fastened at one end to the belly by a tailpiece or projection of wood, and at the other by turning pins at the head or extremity of the neck, by which they can be tightened or loosened at pleasure. The strings thus passing over the belly are

raised up from it by a bridge, which is supported in the interior by the sound post; and on the belly there are two sound-holes opposite each other, of a form resembling the letter f, or rather the long f. The sounds are produced by drawing a bow across the strings, the upper surface of the bridge being convexly curved, so as to enable the bow to be drawn along each string separately, without coming in contact with the rest. The modern violin has four strings of gut, the lowest covered with fine silvered copper wire, or sometimes, in the best instruments, with silver or even gold wire. These strings are tuned in fifths, the highest or first string sounding E on the fourth space of the treble clef, and the other three the A, D, and G in succession below. No instrument can compare with the violin in power of expression and execution. It has an unlimited command over a very wide range of sounds, to which any degree of piano and forte, of staccato and legato, can be imparted. In orchestral music there are always two different violin parts known as first and second violin; and the same is generally the case when the violin is used in concerted music, the usual arrangement of stringed quartet music being for two violins, viola, and violoncello.

Experience has shown that the minutest details of form and proportion, and the material of which each separate part is made, are matters of vital importance to the quality of the violin. The great makers seem by a succession of delicate experiments and observations to have attained to acoustical qualities of high perfection, which their careful workmanship and extreme dexterity enabled them in all cases unfailingly to reproduce. The prices of the best violins of Stradivari and Guarnieri del Gesu range from $10,000 to $25,000, but several have exceeded the latter figure; one was sold a few years ago at the fancy price of $78,000.

Violoncello, a bow instrument of the viol class, held by the performer between the legs, and filling a place between the viola and the double-bass. It is strung with four gut strings, the lower two covered with silver wire, and tuned in fifths. The compass usually employed extends from C on the second leger line below the bass staff to A on the second space of the treble, though soloists play an octave higher, with all the intermediate semitones.

Viper, a genus of venomous snakes. This family includes many important forms — e. g., the common adder, the asp, extending as far N. as Sweden; the African horned viper and puff adder, the Indian daboia or Russell's viper, and the Indian Echis carinata. The head is relatively broad, somewhat



COMMON VIPERS.

triangular, and generally covered with scales; the eye has a vertical pupil, and there is no pit between it and the nostril; the maxilla bears on each side one functional fang, usually with several reserve fangs beside it; the poison is virulent. The vipers are widely distributed through Europe and Australia; the majority are African. As far as is known they are viviparous.

Viper's Bugloss, a genus of plants. The species are large herbaceous plants or shrubs, rough with tubercles and hairs. Their flowers are often very beautiful. The common viper's bugloss, a large annual plant, is a native of Great Britain and of most parts of Europe growing in dry places, not infrequently in cornfields. Its flowers are at first reddish, and afterward blue. It derives its name, viper's bugloss, from spots on its stem,

which somewhat resemble those of the viper, and the property of healing viper's bites was therefore ascribed to it. Other herbaceous species are found in North and South America, and other parts of the world. Shrubby species are found chiefly in the Canaries and South Africa.



VIPER'S BUGLOSS.

Virchow, Rudolf, a German pathologist; born in 1821, the son of a small shopkeeper and farmer in the village of Schivelbein, in Pomerania. He graduated as doctor in 1843 and became assistant professor at the Berlin Charity Hospital. In the spring of 1848 he was the junior member of a government commission sent to investigate an epidemic of typhus caused by famine among the hand-loom weavers of the Silesian highlands, and the result of his studies which he embodied in a brilliant and forceful report, gave a permanent direction both to his scientific and political career.

Before undertaking this task, he had been appointed in 1847 a regular lecturer in the University of Berlin, and in the same year had founded, together with Dr. Reinhardt, his invaluable "Archives of Pathological Anatomy and Physiology and of Clinical Medicine" which has been published ever since. His radical views during the stirring revolutionary times of 1848–1849 led to his expulsion from his Berlin chair. Accepting a call from the University of Wurzburg, he did there some of the most remarkable work of his life, and with a coterie of brilliant fellow teachers soon raised the little university into the front rank of medical schools. In 1856 the University of Berlin recalled him to a full professorship, and, despite his intense interest in politics, he carried on his studies and his teachings without cessation from that time till within six months of his death. His greatest discovery was made at Wurzburg, where he first laid down the theory of the cellular nature of animal tissue, and it was his book, entitled "Cellular Pathology," which not only established his reputation throughout Germany, but made his name respected and honored throughout the entire world. Taking the place of the former vague views of vitality, this theory formed the basis for a new science of physiology.

After this great achievement Professor Virchow made one discovery after another. Never a practitioner himself, he was eminently a teacher of physicians. To these, in later years, the rise and development of bacteriology seemed at first to be in conflict with Virchow's cellular system. The entire medical profession now understands that, while bacteria may cause disease, the disease itself is a particular state of the cells of which the human organism is composed.

But the range of his investigations and discoveries was never confined to any one line or field. Our knowledge of tumors, of tuberculosis, of diphtheria, of embolism, and of the brain, is very largely what Virchow has made it. Indeed, a medical authority has recently declared that "if we should expunge all that medicine as a science directly and indirectly owes to him, comparatively little would be left." Between 1848 and 1879 he wrote voluminously on subjects connected with public hygiene, the reform of medicine, epidemics and endemics, statistics of morbidity and mortality, hospitals, military medicine, school hygiene, criminal law, forensic medicine, and the cleaning of cities. At the same

time he kept on publishing his writings on special subjects, such as "Inflammation of Blood-Vessels," "Contributions to the Pathology of the Skull and Brain," "Cranial Deformities," "New Formation of Gray Cerebral Substance," "Cretinism," etc. In the use of his special knife which he named "the pathologist's sword," in the operating room, he displayed an accuracy and skill that were the wonder of beholders.

But, aside from the field of medicine, this great man displayed a versatility that gave point to the popular saying about him in Berlin, that "when he died it would be found that he was not one man but four men." He rapidly made himself, while still young, an authority in ethnology, a pioneer in anthropology, an able archæologist, and a leading Egyptologist. He established the measurements for comparative anthropology and collected race data as no other man had ever done. The discoveries at Troy were due as much to his knowledge and encouragement as to Schliemann himself, whose stanch friend and invariable defender Virchow was. With Schliemann he traveled through Nubia, Egypt, and the Peloponnesus. In 1879 he took part in Schliemann's excavations in Hissarlik. The graves of Koban he described in 1883, and similarly valuable works in archæology appeared in 1880 and 1882. He was for years one of the teachers of the Berlin Association of Artisans, and devoted no little of his precious time to the spreading of the knowledge of nature among the poor. As a linguist, Virchow was a marvel to scientific men. At nearly all international conferences he was able to address the great audiences that came to hear him in their own languages. During the wars with Austria and France he was an officer of the army aid societies in Berlin, and conducted the first sanitary trains into the enemies' territory. He was elected to the Prussian Chamber as one of the Freisinnig or Radical party in 1862, and served in that body continuously till his death. In this Chamber he was for 25 years chairman of the Committee on Finance, and to a very great extent he himself laid the foundation of the present constitutional budget system of Prussia, just as he is also responsible for the German laws in relation to fishing which he drew up or inspired when at the head of the German Fishing Association. From 1880 to 1893 he was a member of the Reichstag, in which he represented a Berlin constituency till ousted by the Social Democrats. Died in Berlin, September 5, 1902.

Virginal, a stringed instrument played by means of a keyboard, like the modern pianoforte. It was in form like a box, or desk of wood without legs or supports, and was usually placed on a table or stand. The strings were of metal, one for each note, and the sound was made by means of pieces of quill, whalebone, leather, or occasionally elastic metal, attached to slips of wood called "jacks," which were provided with metal springs. The compass was about three octaves. The virginal was a kind of oblong spinnet, and the precursor of the harpsichord, now superseded by the pianoforte.

Virginia, a State in the South Atlantic Division of the North American Union; bounded by Maryland, North Carolina, Tennessee, Kentucky, West Virginia, and the Atlantic Ocean; one of the original 13 States; capital, Richmond; number of counties, 100; area, 42,627 square miles; pop. (1920) 2,309,187; (1930) 2,418,075.

The surface of the State is diversified, rising in a series of terraces from the coast to the mountains in the N. W. Tide-water Virginia is penetrated by the Chesapeake Bay and has a shore line of 1,500 miles. The middle section of the State is an undulating plain with an elevation of from 200 to 500 feet and extends to the foot hills of the Appalachian range. The W. part of the State is mountainous, the Blue Ridge and Piedmont ranges crossing the State in a S. W. direction, and the Alleghenies forming the boundary of West Virginia. The Valley section is a broad belt of rolling country diversified by hills, ridges, and river valleys, lying between the Blue Ridge and Allegheny Mountains.

In 1927 there were produced in this state 13,366,000 short tons of coal, 66,879 long tons of iron ore, 84,920 long tons pig iron, besides considerable coke, granite, lime and clay products.

In 1925 the value of all farm property was estimated at $999,465,839.

There were 193,723 farms, with 588,866 acres not forest land. The chief crops in 1929 were: corn, 44,138,000 bu.; potatoes, 17,461,000 bu.; hay, 1,400,000 tons; tobacco, 118,320,000 pounds; apples, 13,000,000 bu.; wheat, 8,960,000 bu.; sweet potatoes, 6,705,000 bu.; peanuts, 146,080,000 lbs.; cotton, 46,000 bales.

In 1927 there were 2,432 manufacturing plants employing 114,918 wage earners, paying $110,758,000 for wages, and $346,166,000 for raw materials and yielding products having a combined value of $671,347,000.

In 1928 there were, in the elementary schools of this state 16,341 teachers and 553,717 pupils. For higher education there were 357 high schools with 2,490 teachers and 58,142 pupils; and 32 colleges and universities with 1,260 teachers and 15,034 students.

The Virginia judiciary consists of a Supreme Court of Appeals, Circuit Courts, City Courts and courts of the justices of the peace.

In the Supreme Court five judges sit, chosen by the state Senate and House of Delegates for twelve years and any three of them may hold court. The state is divided into thirty districts and one Circuit Court is provided for each. The judges for these courts are chosen by the Senate and House of Delegates for terms of eight years. Cities of 100,000 or more have City Courts ranking with the Circuit Courts and local justice is administered by justices of the peace.

The Governor is elected for a term of four years and receives a salary of $5,000 per annum. Legislative sessions are biennial and limited to 60 days each, but may be extended for a period not exceeding 30 days, upon a three-fifths vote of both houses. The Legislature has 40 members in the Senate and 100 in the House. There are 10 Representatives in Congress.

The first settlement in Virginia was made at Jamestown, by the English in 1607. George Washington first became known during the French and Indian War, in 1754, as an officer in the Virginia militia. This colony under the lead of Patrick Henry, was the first to resent British oppression in 1764. During the Revolution several important engagements took place on Virginian soil, most notable being the defeat and surrender of Cornwallis at Yorktown, Oct. 19, 1781. Virginia joined the Confederacy and passed an ordinance of secession on April 17, 1861, and became the scene of some of the most important battles of the Civil War; ending in the final surrender of Gen. Robert E. Lee at Appomattox Court House, April 9, 1865. Virginia was readmitted to the Union Jan. 27, 1870, and in 1881 celebrated the 100th anniversary of the surrender at Yorktown by laying the corner stone of a national monument, Oct. 18, 1881.

Under the National Banking Act of 1913, Virginia is included in Federal Reserve District No. 5, of which Richmond is the central reserve city. In the year ended Dec. 31, 1929 there were 159 National banks, with total resources amounting to $3,912,000,000, and time deposits, $144,892,000. The exchange at the clearing house in Richmond totaled $23,129,000,000 and at Norfolk, $2,560,000,000.

The customs headquarters is at Norfolk where, in the year ended June 30, 1929 the imports of merchandise were valued at $30,867,000 and the exports, $172,000,000.

Virginia's net revenue in the year 1927 was $38,239,501; net expenditure, $36,529,016; net debt, $26,637,392; assessed property valuation, $2,108,935,240.

Virginian Deer, the common deer of North America. It is slightly smaller than the fallow deer; reddish-yellow in summer, light gray in winter; antlers recurving; tail about a foot and a half long. These deer are timid and wild, and therefore domesticated with difficulty. Their flesh formerly constituted the staple food of the native Indians.

Virginian Eared Owl, a large species common over the Northern States of the American Union. Length about two feet; reddish-brown on upper surface, mottled with black, and covered with regular bands of the same hue, lighter beneath; throat white; beak and claws black.

Virginian Quail, a species of rasorial birds and nearly allied to that of the partridges. The Virginian quail is also named the Virginian colin. It attains a length of 8 or 10 inches, and is of a reddish-brown hue, mingled



YOSEMITE FALLS, CALIFORNIA


VIRGIN ISLANDS
OF THE UNITED STATES
ST. THOMAS
AND
ST. JOHN
SCALE OF MILES
0 1 2 3 4
65° 5'
65°
64° 45'
64° 40'
64° 35'
COCKROACH I.
OUTER BRASS I.
INNER BRASS I.
LITTLE HANS LOLLIK
HANS LOLLIK
DUTCHMAN'S CAP
SALT CAY
WEST CAY
TURKEY CAY
SAVANA I.
Savana I. Passage
Bordeaux Bay
Stumpy Bay
Thicket Pt.
Santa Maria Bay
Bordeaux B.
Nellisberg
Sorgentri Hill
St. Marie
Hope
Dorothea
Bonne Esperance
Lerkenlund
Solberg
Ma Folie
Contant Mills
Altona
Fortuna B.
Fortuna
Perseverance Bay
Black Pt.
Davids Pt.
Picara Pt.
Leeward Passage
Great North Side Bay
Lovelund
Turn B.
Winterberg
Peak
St. Thomas
St. Thomas Harbor
Frydendal
Water Bay
Annas Retreat
Coki Pt.
Water Island
Cabes Pt.
Redhook Pt.
Current Hole
Current Hole and Passage
Turner B.
Havensicht
Nulliberg
Flag Hill
Mariendal
Nadir
Nazareth
Bovoni
Jersey B.
Gt. James I.
St. James B.
Cas. I.
L. St. James I.
Dog I.
Buck Is.
French Bay
Bonnets B.
Long Pt.
Flamingo Pt.
Cowell Pt.
Maidenjels Pt.
Gregory Chart.
Mosquito B. Pt.
Red Pt.
Mosquito B.
Flat Cays
Turtle Dove Cay
Saba I.
South West Road
Hassels Island
Water Island
Middle Passage
Brass Cay
Thatch Pt.
Mingo Cay
Congo Cay
Lovango Cay
Windward Passage
The Narrows
Cinnamon B.
L. Cinnamon B.
L. Cruz B.
Gt. Cruz Bay
Chocolate Hole
Bahuna Pt.
Rendezvous Bay
Dittleas Pt.
Francis B.
Tunis Bay
Leinster B.
South B.
Little Annaberg
Mabo Bay
American Hill
Carolina
Catherineberg
Emmaus
Susannaberg
Gamelsberg
Castle Hills
Peak
Browns Bay
Mennebeck Bay
Mores Hill
Hurricane Hill
Coral Harbor
Round Bay
East End
Flanagan
Privateer Pt.
Privateer B.
Rendezvous Bay
Kenigkeit
Mallendal
Par Force
Lameshur
Bay
Reef Bay
Sabbat Pt.
Bourdeaux
Coral Bay
Buck I.
Nanny Pt.
Drunk B.
White Pt.
Lemonbar Pt.
Cobrite Pt.
Kudile Pt.
Rum Hill
Tortola I.
(Br.)
Gt. Thatch I.
L. Thatch I.
Frenchmans Cay
TOBAGO I.
LOST VAN DYKE I.
TORTOLA (Br.)
PETER I.
NORMAN I.
ST. THOMAS
ST. JOHN
VIRGINIS.
ST. CROIX
Christiansted
Fredericksted
SCALE OF MILES
0 5 10 15
Hams Bluff
Hams Bay
Butlers B.
Wills Pt.
Little Cane Pt.
Cane B.
Barons Bluff
Salt River Bay
Salt River
Salt River Hills
Hams Peak
Amt. Washington
Amt. Eagle
Blue Mt.
Mill R.
Fort Louisa Augusta
Protestant Cay
Green Cay
Sandy Point
Lagoon
Welcome
Coakley B.
Pull Pt.
Buck Is.
Tague B.
Sprat Hole
Battery
Orange Grove
Mount Pleasant
Sion Hill
Christiansted
Lange Observatory
The Sight Mill
Boat Hill
Sugar Estate
Eastern Pt.
Jacks B.
Prosperity
Sig. Hill
Signal Hill
Lange Peak
Gt. Salt Pond
Gt. Pond Bay
Turners Hole
Teague Bay Pt.
Teague Bay
Rodneys B.
Caramaw Hill
Kranse Lagoon
Spanish Town
The Springs
Retreat
Frederiksted
Hannahs Rest
Paradise
West End Salt Pond
Long Point Bay
Long Pt.
Drakes B.
Negro B.
Kongo B.
Krausse Pt.
Southwest Anchorage
Southwest Pt.
Root Tree Bay
Cove Garden B.
Watchhouse Pt.
Spring B.
Butlersparry B.
Blanchemt B.
Caribbean Sea
ST. CROIX
SCALE OF MILES
0 1 2 3 4
C. S. Hammond & Co., N. Y.

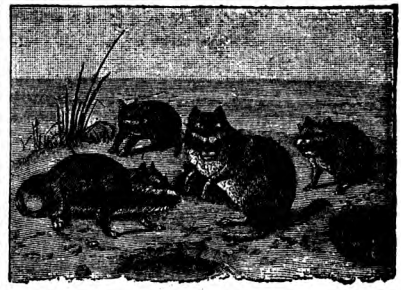
with gray and black above, and yellowish white below. The head and breast are reddish brown and the chin pure white. The voice is clear, and the note resembles the words "bob-white" — a name often familiarly given to the bird. The Virginian quail feeds mostly on grains and inhabits open grounds, but in winter it approaches the habitations of man. The eggs may number as many as 24. The flesh is highly esteemed.

Virginia Military Institute an educational non-sectarian institution in Lexington, Va.; founded in 1839.

Virgin Islands, a group of a considerable number of small islands of the West Indies, lying E. of Porto Rico, and constituting virtually the link between that island and the Leeward group of the Lesser Antilles. They are shared by Great Britain and the United States, the latter having purchased St. Croix, St. Thomas, and St. John from Denmark in 1917 for $25,000,000, because of their strategic importance in connection with other American possessions in that region. The three islands were renamed the Virgin Islands of the United States and placed under naval control. See also WEST INDIES, DANISH.

Visayas, The, a group of islands, which occupy the central part of the Philippine Archipelago, between Luzon on the N., Mindanao on the S., the Pacific Ocean on the E., and Paragua on the W.; area, 57,714 square kilometers; pop. (Est.) 3,000,000. Many of the islands are mountainous, but there are valleys and plains which are usually very fertile. Agriculture is quite extensively carried on. There are large crops of rice, sugar cane, subacao, coffee, chocolate, wheat, corn, tobacco, hemp, etc. The forests of the islands are generally rich in excellent building and cabinet woods, such as molave, ipil, banaba, durigon, alintatao, narra, etc. There is also found in the forests an abundance of pitch, resin, gum, mastic wax, and honey. Gold, silver, lead, coal, marble, etc., are mined to a greater or less extent in some of the islands. Manufacturing is carried on to a considerable extent. In the province of Antique, on the island of Panay, the manufacture of fabrics from pineapple fiber, jusi, and sinamay, gives employment to about 12,000 women in some 7,000 shops. Hunting and fishing are also important industries.

Viscacha, in zoölogy, a stout-built rodent, resembling a marmot, from 18 inches to two feet long, exclusive of the tail, which is from six to eight inches. Four digits on the fore and three on the hind limbs, the latter furnished with long, compressed, and pointed nails; muzzle broad, and covered with a velvet-like coat of brown hair; fur mottled gray above, yellowish-white beneath; dark band on each cheek, a white band on muzzle, running back on each side almost as far as the eye. They are nocturnal, and resemble rabbits in their movements, but are less active. They are found



VISCACHA.

on the pampas, from Buenos Ayres to Patagonia These animals have the strange habit of dragging all sorts of hard and apparently useless objects to the mouth of their burrow, where bones, stones, thistle stalks, and lumps of earth may be found collected into a large heap, sufficient, according to Darwin, to fill a wheelbarrow

Viscera, in anatomy, the contents of the great cavities of the body, as of the abdomen, chest, and skull; but in popular language restricted to the organs of the thorax and abdomen; the bowels; the entrails.

Vischer, Peter, German sculptor; born at Nuremberg, Bavaria, in 1455; son of a worker in bronze. He attained great fame as an artist, and was patronized by both German and

foreign princes. He died at Nuremberg in 1529.

Visconti, an old Milanese family, celebrated for its political importance and its patronage of science.

Viscount, a degree or title of nobility ranking next below an earl, and above a baron. It was first conferred on John Lord Beaumont, in A. D. 1440. The title of viscount is frequently held in England as the second title of an earl, and is borne by the eldest son as a courtesy title during the life of his father.

Visegrad, one of the principal military stations of the E. frontier of Bosnia, 43 miles E. of Serajevo, where the Archduke Francis Ferdinand, heir to the Austrian throne, and his wife were assassinated on June 28, 1914, and about 10 miles W. of the Servian frontier. These assassinations were the alleged immediate cause of the World War.

Vishnu, in Brahmanism, the second person of the modern Hindu Trimurti. When he first appears in Vedic times, he is simply the God of the Shining Firmament, the younger brother of Indra, and inferior to him in dignity. By the time that the epic poems, the Ramayana and the Mahabharat, were composed, Vishnu had made a considerable advance to his present position, the full attainment of which, however, was reserved for the period of the Puranas. One of these books is called the Vishnu Purana. He is regarded as the member of the triad whose special function is to preserve. His most enthusiastic followers are generally drawn from the middle classes of Hindu society. His mark on their foreheads is a trident, with a yellow fork in the center, and a white one on each side. Many monastic sects worship him almost exclusively.

Visible Church, in theology, the Church, as seen by man, not as it appears to God. It includes the whole body of professing Christians, some of them regenerate, others unregenerate; the two classes commingled, as were the wheat and tares mentioned in the parable. It is distinguished from the Invisible Church, consisting only of the regenerate; but who are worthy of this designation is known only to God.

Visible Speech, the system of expressing speech sounds by written symbols, invented by Prof. Alexander Melville Bell during the years 1849–1864. Its fundamental principle is, says its author, "that all relations of sound are symbolized by relations of form, each organ and each mode of organic action having its appropriate symbol, and all sounds of the same nature produced at different parts of the mouth (such as t and d, b and p) being represented by a single symbol turned in a direction corresponding to the organic position." Among the advantages claimed for visible speech by Professor Bell are its power of representing the exact sounds of foreign languages, and the facilities offered by it toward teaching the illiterate and blind to read, and the deaf and dumb to speak.

Visigoths, the Western Goths, who came from Scandinavia, and settled in Mœsia, A. D. 376. They established themselves in Gaul A. D. 412, and, passing into Spain, founded a kingdom there in 414, which was overthrown by the Moors in 712.

Vision, the act of seeing, that faculty of the mind by means of which, through its appropriate material organ, the eye, we perceive the visible appearances of the external world. Vision is mainly concerned with the color, form, distance, and tridimensional extension of objects. It is caused by impact of ether waves on the retina of the eye, but if these waves be longer or shorter than a certain limit, there is no visual impression produced by them. The apparent color of an object depends partly on the wave length or wave lengths of the incident light waves, single or mixed, and partly on the state of the eye itself, as in color blindness, or after taking santonine, which makes external objects look yellow, or in jaundice. The apparent brightness of an object depends on the amplitude of the light waves which pass from it to the eye; and the smallest perceptible difference of brightness always bears a nearly constant ratio to the full intensity of the bright objects (Fechner's psychophysical law). As between different colors the eye perceives them with different intensities, even when the physical intensity is the same; thus

yellow appears brighter in a bright light than an equally intense red; and as light fades away the different colors fade away unequally, so that the ratio in Fechner's law is different for each color; red and yellow disappear first, blue last; and thus in a dim light the blue is the brightest.

Vison, a genus of carnivorous quadrupeds included in the weasel family. Of this genus the mink is the most familiar example. It inhabits Northern America and Northern Europe, attains a length of a foot and a half or rather less, and is of a brown color, marked with white on the chin and jaws. Its fur is very valuable.

Vistula, one of the chief rivers of Europe, rising in Austria, flowing through Russian Poland, by way of Warsaw, crossing W. Prussia, and having its mouth in the Gulf of Danzig.

Vitamins. Substances present in small quantities in certain foodstuffs. Their functions are to aid the assimilation of foods, and their full and correct use by the body.

Vitellius, Aulus, a Roman emperor; born A. D. 15. On the death of Galba, he was proclaimed emperor by the soldiers at Koln, Jan. 2, 69 A. D., and having crushed his rival Otho he secured undisputed possession of Italy. Though undoubtedly a man of low character, he did not proceed to extreme measures against the adherents of his rival. His chief passion was sensual gluttony, and he spent enormous sums of money in eating and drinking. Vespasianus revolted and was proclaimed emperor July 1 at Alexandria, and Antonius Primus declared for the new emperor and hastened into Italy at the head of a powerful force. He defeated the generals of Vitellius twice and entered Rome on Dec. 21 or 22, 69. The fallen emperor was seized and murdered.

Vitis, the typical genus of the order Vitaceæ, comprising the vines. The Vitis Vinifera is popularly known as the grape vine.

Vitre, a town of France, Department of Ille-et-Vilaine, 25 miles E. of Rennes and 45 miles from the sea. Its ancient ramparts are still preserved, and its 11th century castle is now occupied by a prison, museum, and library. Charles VIII. seized it in 1488, and the League vainly besieged it in 1589. Pop. about 8,000.

Vitry-le-François, a town of France, Department of Marne, 20 miles S. E. of Chalons, 100 miles E. of Paris; was built in 1545 by Francis I. to replace the older town burned in 1544 by Charles V.; it chiefly engaged in the manufacture of decorated wares. Pop. about 9,000.

Vitriol, a commercial name for sulphuric acid, and for several salts which that acid forms. The term vitriol was in common use among the alchemists, and was derived from vitrium, "glass," on account of the glassy appearance and transparency of copperas or green vitriol (the sulphate of iron). From copperas the alchemists prepared a strong sulphuric acid by distillation, whence also the acid was termed the oil of vitriol. In addition to these there is yet commercially known blue vitriol, which is a sulphate of copper, and white vitriol, the sulphate of zinc much used in medicine.

Vitus, St., a reputed martyr under Diocletian; the son of a Sicilian pagan, but converted by his nurse Crescentia and her husband Modestus. All three perished together, in Lucania or at Rome, the festival falling on June 15. The relics of St. Vitus are preserved at Corbey and at Prague. He is invoked against sudden death, hydrophobia, prolonged sleep, and the complaint commonly called the chorea or dance of St. Vitus; some authorities make him also the patron of comedians and dancers. It is said that in Germany in the 17th century it was a popular belief that good health for a year could be bought by bringing gifts to his image and dancing before it on his festival — a practice especially in vogue at his chapels at Ulm and Ravensberg.

Vivandiere, a woman attached to French and other European continental regiments, who sells provisions and liquor. The dress of the vivandieres is generally a modification of that of the regiment to which they are attached.

Viverra, the civet cat, with the range of the family. All the species are extremely active, fierce, and rapacious, and feed chiefly on small mammals and birds.

Vivisection, a term denoting, in its strict signification, the dissection of living animals, but popularly employed to denote the practice of performing operations with the knife on living animals, with the view (1) of increasing physiological knowledge; (2) of converting speculative into positive conclusion; and (3) of acquiring manual dexterity in operative surgery. In this last sense vivisection is principally confined to the French veterinary schools. By biologists the term is extended to include the performance of all scientific experiments of a kind calculated to inflict pain on living animals, and having for their object the investigation of the laws which govern life, the processes of disease, the action of heat and cold, poisons, and therapeutic remedies. The practice appears to have been introduced by the Alexandrian school in the 4th century B. C.; and to this practice we owe, among many other benefits, the discovery of the circulation of the blood by Harvey; the treatment of aneurism by ligatures by Hunter; the distinction of the sensory and motor nerves by Bell; the introduction of chloroform; and the improved treatment of cerebral diseases which resulted from the researches of Brown-Sequard and Bernard. Among the chief investigators by this method of research at the present day are Burdon-Sanderson, Greenfeld, and Klein, in England; Pasteur in France, and Koch in Germany.

Vivisection has met with vigorous and organized opposition in Europe as well as in the United States, where bills have been brought before various legislatures for the restriction or abolition of the practice. On Feb. 21, 1900, a Senate Committee gave a hearing in Washington, on a bill "For the Further Prevention of Cruelty to Animals in the District of Columbia," prominent professional men and officials appearing on both sides. The proceedings were afterward published. President Eliot of Harvard is one of the leading advocates of vivisection in the United States, basing his arguments on the great advances made by its means in medical science in recent years. He objects, however, to its use in secondary schools or before college classes for the purpose of demonstration only. In England, the passage of the "Cruelty to Animals Act" of 1876 legalized vivisection with restrictions according to which it must be performed under license, the only experiments allowed without anæsthetics being such as inflict no pain greater than the prick of a needle. Vivisection comes within the restraints imposed by State laws against cruelty to animals, and is vigilantly watched by anti-cruelty societies.

Vizier, the title of a high political officer in the Turkish republic and other Mohammedan states. The title is given in Turkey to the heads of the various ministerial departments into which the divan or ministerial council is divided, and to all pashas of three tails. The prime minister, or president of the divan, is styled the grand vizier, vizier-azam, or sadr-azam. In India vizier was the title of the highest officer at the Mogul court at Delhi; and nawab-vizier ultimately became the hereditary title in the dynasty ruling at Oude.

Vladimir I., a Czar of Russia, commonly called Vladimir the Great, or Saint Vladimir; son of the Grand-Duke Sviatoplav by a woman of low condition, and great grandson of Rurik. His father assigned to him the government of Novgorod, dividing the rest of the empire between his two legitimate sons, Jaropalk and Oleg. In 977 Jaropalk quarrelled with Oleg and killed him, and Vladimir would probably have met the same fate had he not fled to Ukrania. Two years later he returned with an army, overcame Jaropalk, and remained sole master of the empire, having his capital at Kiev. He then set himself both to extend and to consolidate his dominions, which were little better than a collection of tributary states, scarcely subject to any real control. He enlarged his boundaries from the Black Sea to the Baltic, and appears to have had an intention of welding his empire into a homogeneous mass

through the agency of a common religion, in which he tried to combine the Slavonian and the Finnish superstitions. In 988, however, an event occurred which altered his schemes entirely. He had already five wives and almost 1,000 concubines, but while besieging the Christian city of Cherson, in the Crimea, he conceived the idea of demanding the hand of Anna, the sister of the Byzantine Emperors Constantine and Basilios. Through the agency of this princess, known in history as Anna Romanovna, he was converted to Christianity. His subjects, who had already been prepared for Christianity by intercourse with the Greeks, followed his example. The Scriptures had already been translated into Slavonic by Cyrillus and Methodius, and Russia soon became a Christian country. Vladimir was then as enthusiastic in his Christian virtues as he had formerly been in his heathen vices. He could scarcely be induced to sanction capital punishment, he exercised a lavish charity, built churches and monasteries, and promoted not only the Christianization but also the civilization of his subjects. He died in Beresyx in 1015 at a great age, and divided his empire among his 12 sons. The Russian Church canonized him, and gave him a rank equal to that of the Apostles, and the famous "Vladimir order" was founded in his honor in 1782.

Vladimir II., called Monomachus, after his maternal grandfather, the Emperor Constantine Monomachus, was born in 1052, and succeeded to the empire in 1113, in opposition to the ordinary Slavonic rules of inheritance. Though not free from some of the barbarisms of his age, he did much for Russia by the establishment and enforcement of just laws, and the consolidation of the internal affairs of the empire. He was married to Gida, daughter of King Harold of England, and his granddaughters married the kings of Norway and Denmark, so that the famous Vlademar, of Denmark, was his great-grandson. He died in Kiev, May 19, 1126, leaving behind him a long "testament" full of instructions to his descendants, which presents a curious picture of contemporary manners and opinions.

Vladivostok, a seaport of Eastern Siberia, in the Gulf of Peter the Great, Japan Sea. Founded in 1861, it has become the great naval station of Russia on the Pacific, and is also an eastern terminus of the Trans-Siberian railway. It is strongly fortified on the land as well as the harbor side, has two large dry docks, extensive shipbuilding yards and mechanical shops, and has every modern improvement in the form of electric railways, street-lighting, etc. The Russian Pacific fleet had its nominal headquarters at Vladivostok, but the outbreak of the Russo-Japanese War in 1904, found the major portion of their ships at Port Arthur, where they received severe damage and losses. A small squadron remained at Vladivostok which was effectually bombarded in March by the Japanese. The Vladivostok squadron made sorties in which they inflicted some damage on Japanese shipping. Pop. (1922) 194,689.

Vogel, Sir Julius, an Australasian statesman; born in London, Feb. 24, 1835, of Jewish parentage. He went to Melbourne during the gold rush, and after being engaged in various business pursuits and on the gold fields, devoted himself to journalism. He afterward went to Dunedin, N. Z., became a member of the House of Representatives and of the Provincial Council of Otago. He held ministerial office frequently after 1869, and was agent-general in London from 1876 to 1881. He established the first daily newspaper in New Zealand, and the mail service between San Francisco and New Zealand, and his name was connected with all the public enterprises of his day in New Zealand. During the 10 years preceding 1881 he was the means of introducing 100,000 immigrants and of building 1,200 miles of railways in the colony, and was influential in bringing about Australian federation. He was knighted in 1875. He died March 13, 1899.

Voice, an audible sound produced by the larynx, and effected by its passage outward through the mouth and other cavities. When so modified in particular ways it becomes speech or song. The main differences between these two latter are that speech is more limited in compass or pitch, that

it is less sustained in respect of pitch, and is not confined to the notes of a musical scale, that it is associated with a less clear or open passage for the breath, and that it presents certain utterances (consonantal, aspirate, guttural, etc.) which have not a purely musical character. The larynx is the organ by which the so-called vocal sounds (or primary elements of speech) are produced.

The larynx contains within itself a great power of adjustment, such as is possessed by no musical instrument; the tension of the vocal cords can be varied, the vibrating portion of the vocal cords can be shortened; the distance between them can be varied; their form can be altered, as by blunting their free edges or by flattening their whole structure; and they can be prevented from vibrating in their whole breadth, the vibrations being then confined to their margins merely; and these adjustments may be combined so as to suit different pressures of air from the lungs. Further, above and below this primary sounding apparatus there are adjustable cavities, which act as resonators, and thus affect the quality of the sound produced.

The actual action of the larynx as a sounding instrument has only been clear since Garcia introduced (1855) the laryngoscope as a means of observing what went on during actual vocalization; and a flood of light has been thrown on the subject by the researches of Czermak, Merkel, Madame Seiler, and Behnke. The crico-thyroid muscles pull the thyroid cartilage and the cricoid cartilage together; the vocal cords are thus tightened; and the posterior crico-arytenoid muscles aid in this. The thyro-arytenoid muscles relax the vocal cords, and twist the arytenoid cartilages round so as to make their attachments to the vocal cords come over toward one another instead of lying at some distance from the middle line; and they can also so act as to press portions of the vocal cords together, and thus shorten the free vibrating edges; and further, they can squeeze their own inner portions thin, and thus flatten and thin the vibrating part of the vocal cords. The posterior crico-arytenoid muscles, in addition to aiding in tightening the vocal cords, twist the arytenoid cartilages so as to widen the back part of the chink between the vocal cords; while the lateral crico-arytenoids as well as the thyro-arytenoids perform the reverse operation, and thus narrow the chink, and are assisted in this by the arytenoideus muscle, which directly pulls the arytenoid cartilages together. These muscles in combination effect the various adjustments above spoken of. In a state of rest the glottis lies open, and respiration is unimpeded; in deep breathing the chink is still wider, but as soon as we wish to utter a note the two arytenoid cartilages rapidly approach one another, and the glottis-chink is narrowed. At the same time the superior or false vocal cords approach, but never touch one another. If the vocal cords meet one another before the current of air flows to produce the tone, there is a disagreeable jerk or click at the commencement of the note; if the air flows before the vocal cords have sufficiently approximated, there is an aspirate, and the "attack" or beginning of the note is uncertain; the two actions ought to coincide in time, and then the "attack" is clear and precise, for the vocal cords are brought to the right place for vibration at the very time when the air begins to tend to set them in motion.

In different larynxes much depends on the relative sizes of the vocal cords; thus a man with a bass voice has longer vocal cords than a child or a woman; but as between basses and tenors, tenors and contraltos, or contraltos and sopranos, the higher voice may sometimes appear to have the longer vocal cord; on the other hand, slenderness of structure makes up for greater length, and when the vocal cords are long and slender, the voice is "flexible," for the cords readily enter into vibration. Further, a narrow larynx is conducive to high pitch, and so is not only the size, but also the form of the female larynx, in which the upper part, above the false vocal cords, and between them and the hyoid bone, is comparatively flat. In children the larynx is small, and the voice high-pitched; but the larynx

grows very rapidly at puberty; and as its different parts do not then grow with proportionate rapidity, the muscular control is uncertain, and the voice, especially in boys, breaks.

Voit, Karl von, a German physiologist and author; born at Amberg, Bavaria, in 1831. He was educated at Munich, Wurzburg, and Göttingen, and after a period as Bischoff's Assistant at Munich, became professor of physiology there in 1863. Two years later, he founded the "Zeitschrift für Biologie," a periodical in which he laid the foundations of his celebrity, by his writings on nutrition, etc.

Voiture, Vincent, a French courtier and poet; born in 1597; died in 1648. His wit was redoubtable; and his works published posthumously in 1850, have passed through several editions.

Volapuk. The story of Volapuk, the youngest member of the artificial family of languages, has been so often told that it need not be repeated at length here. How Johann Martin Schleyer, an obscure but scholarly German priest, devoted 20 years of study to the subject; how the whole scheme flashed across his mind one sleepless night, and how in a few days afterward Volapuk was born, has often been related, although "Volapuk" is making but little headway.

Schleyer's years of linguistic study as a preparation for his task, were spent in examining the structure — the mechanism of the important languages of the world. When he had closed his researches in this field, he chose the Aryan family as the general model for his invention. His aim was to produce a language free from all the defects of one of natural growth, with all irregularities and speech peculiarities eliminated. He called his invention Volapuk—"World's Speech." Since then its aim is so high, it must of necessity in its sounds, in its words, and in its structure be so simple and so regular as to be easy of acquisition by persons in all parts of the earth. To this end, sounds peculiar to our language and difficult for persons not natives were not employed. The Roman alphabet was used with the exception of w and q. To this the letters ä, ö, a, d, ü were added, making an alphabet of 27 letters. The vowels are sounded as the long vowels in Italian and have but one sound. The consonants are sounded, in the main, as in English. In the compromise made necessary by the purpose of Volapuk each language had to surrender something. French gave up its nasals; German, its gutturals; Italian, its liquids, while all alike gave up their articles and analytic form. Volapuk is a synthetic and inflectional language like Latin. By this means it can express thought with great clearness and conciseness. The order of the words in a sentence, however, is of the modern type.

The radicals, or root words, form the basis of the language. These are usually nouns. About 40 per cent. of these have been taken from English; the rest are from other Aryan languages, chiefly German, Latin, and French. By what methods the radicals, or root words, were made ready for use and from what source they were taken will now be shown. The general principle determining the choice of a root seems to have been brevity, clearness, and ease of utterance. For these reasons the Volapuk word for man is man, a Germanic form, while the word for house is dom, a Latin form. The word for time is tim, from the Rumanian (timp); for bridegroom, gam, from the Greek. These radicals are generally of one syllable and begin and end in a consonant, that the case endings of the nouns and arguments and personal endings of the verbs may be applied directly to the root.

Volcanic Rocks, in geology, rocks which have been produced at or near the surface of the earth in ancient or modern times by the action of subterranean heat, by water, and pressure. They form one of the leading divisions of rocks, and resemble plutonic rocks in being generally unstratified and destitute of fossils, but are distinguished from them. Volcanic are more partially distributed than aqueous rocks. Old volcanic rocks are so nearly identical with the products of modern volcanoes, that the two were undoubtedly produced in a similar manner. The leading volcanic rocks are basalt, andesite, and trachyte.

Volcanic Regions, certain regions of the world throughout which volcanic and earthquake action specially prevails. They run in lines. The region of the Andes extends from lat. 43° S. to 2° N.; that of Mexico follows, then that of the West Indies. Another extends from the Aleutian Islands to the Moluccas and the Isles of Sunda, another from Central Asia to the Canary Islands and the Azores. There is one in the Grecian Archipelago, having its chief focus at Santorin, known to have been active at intervals for 2,000 years; then that of Italy and Sicily, having vents in Etna, Vesuvius, and Ischia. One region is in Iceland, with Hecla as its chief vent. Volcanoes are generally near the sea. Jorullo, in Mexico, is, however, an exception, being 120 miles from the nearest ocean.

Volcanoes. Ages ago the earth on which we live was a huge mass of "fire mist." Astronomers tell us that today in the heavens we can see vast nebulæ, suggesting what the earth was once. Gradually the surface of the "fire mist" cooled and hardened, but the interior is still intensely hot. Whether it is solid, liquid, or viscous we do not know. This heat, raging miles below the surface, at times escapes through the hard crusts by vents or volcanoes.

There are from 300 to 360 volcanoes on the globe. This estimate includes merely live volcanoes and volcanoes which within recent times have been in action. If we should count the many mountains scattered over the earth which today show signs of volcanic action in more remote past, the estimate would have to be increased by many hundreds.

Volcanoes would seem to be arranged with more or less symmetry in belts circling the great oceans. A ring of fire surrounds the Pacific. Starting at the South Shetland Islands, several hundred miles S. of Cape Horn, a belt of volcanoes extends up the W. coast of South America; Central America and North America; from Alaska it crosses the Pacific along the Aleutian Islands to Kamchatka; thence it follows the E. edge of the Pacific through the Kurile Islands, Japan, Formosa, the Philippines, the Moluccas, the Solomon Islands, the North Hebrides, New Zealand, and finally ends in Mts. Terror and Erebus, on the Antarctic continent. The volcanoes forming this great belt are in places ranged in chains, as along the W. coast of Central America and in the Aleutian Islands; elsewhere they are separated by long distances, but nevertheless they would seem to have some connection with each other. Sometimes the line of volcanoes surrounding the Pacific is very narrow, as in Central America, and then again it broadens hundreds of miles, as in the W. United States, where extinct volcanoes on the E. edge of the belt are hundreds of miles from the ocean and distant from each other.

Within this great Pacific circle of volcanoes, 25,000 miles in length, are many volcanic islands; the Ladrones, the Hawaiian Islands, with the famous Mauna Loa; the Galapagos, the Samoan Islands, as well as the Tonga and Fiji Archipelagoes, and many smaller groups. The coral islands may be classed as volcanic, as they rest in great part on volcanic foundations.

Eastward from the circle around the Pacific a branch belt extends through Sumatra and Java. On the broken isthmus which ages ago joined Asia and Australia are over 100 volcanoes, many of which are constantly belching forth mud, lava, or ashes. This is the great focus of volcanic action of the earth. Round nearly three sides of the Atlantic basin volcanic districts are scattered with some apparent symmetry. In the far N. Hekla and nearly one score others separate the Atlantic from the Arctic Ocean. Stretching from Iceland, from N. to S. an irregular submerged ridge bears the volcanic mountains of the Azores, the Cape Verde Islands, Ascension, St. Helena, and Tristan da Cunha. On the W. edge of the Atlantic are the volcanoes of the West Indies; but N. or S. of the Antilles there is not a single volcano on the E. shore of America. The volcanic belt of the Mediterranean shore is prolonged to the mountains of Armenia and Western Arabia. There are said to be some volcanoes in Tibet and Manchuria, but the explorer has not yet located them.

Elisee Reclus has drawn attention to the fact that the great centers of volcanic action in the Western and Eastern hemispheres are at exactly opposite ends of the globe — are at antipodes to each other — and that these centers of activity are near the poles of flattening. They also flank, one on the W. and one on the E., the immense circle around the Pacific.

Volcanoes may be roughly described as of two types — the expulsive and the explosive. Of the first, Hekla, in Iceland, Stromboli, and Mauna Loa in the Hawaiian Islands, are good examples. They pour forth masses of lava, which flows like molasses. Of the second type are Vesuvius, Mont Pelee, the volcanoes of the West Indies, and those of the Andes and Mexico; these eject the material andesite, and are more explosive than those ejecting the ropy lavas.

Theories abound as to the cause of volcanic action, but of actual causes we know little. Science has no X-rays to pierce into the bowels of the earth.

Lafcadio Hearn, in one of his interesting sketches of the French West Indies, published some years ago, tells the story of perhaps the only man who ever descended into the earth while it quaked. It seems that during a certain convulsion that shook and rent a certain island of the West Indies one man was thrown far down a fissure. He was unharmed, but his position, as he tumbled far down in the fissure, was not such as to inspire hope of a scientific study of what had happened or was happening. After some time passed there in the bowels of the earth, another convulsion shook and rent the ground. It tossed him up and out of the fissure and landed him unharmed on solid and firm ground; but when asked how it had all happened, the process of all this tossing, he could not explain. Science had lost its one chance of learning by personal observation what is happening beneath us.

Perhaps the most probable explanation of explosive eruptions of volcanoes is as follows:

The rocks deep beneath the surface are kept moist by the water that slowly seeps through. Probably the rocks contain from 3 to 20 per cent. of water. The heat of the molten mass beneath the rocks gradually generates steam, and as time goes on more and more steam is generated. The pressure of this steam is constantly increasing till a time comes when the weight above cannot hold in the expanding force of the steam. Like a boiler, the whole mass explodes with terrific fury. An earthquake may open a fissure, which, by letting down water rapidly, will hasten the explosion; but it is doubtful if an earthquake can do more than this. Water entering by a fissure could hardly invade the vast area upheaved by an explosive eruption.

The Guatemalan earthquake of April probably timed the explosion of Mont Pelee and La Soufriere. It was the last straw; it brought the last ounce of pressure — one ounce more than the boiler could bear. The local earthquakes in Martinique and St. Vincent were the ruptures and tremors caused by the fettered steam.

Two other factors may assist this process: The shrinking of the earth, which allows the molten mass to rise through fissures and generate steam more rapidly, and the change of load at the surface, caused by deposition or degradation, which thus disturbs the law of equilibrium.

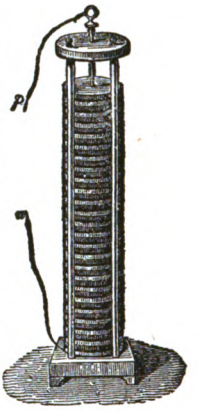
Volga, the largest river of Europe; rises in the Central Russian province of Tver, near the Dwina, about 200 miles from the Gulf of Finland; flows in a generally S. E. direction to the Caspian, which it enters by 8 principal and 200 smaller mouths, forming a delta 68 miles in breadth. About 100 tributaries join this giant river, which with its affluents has a drainage area of 592,300 square miles, waters 22 provinces, and measures from its source to its mouth 2,400 miles. Its breadth at Tver is 705 feet, at the mouth of the Mologa 1,542 feet, above the influx of Kama 4,920 feet and opposite the mouth of the Kama nearly 5 miles. The course of the Volga is very slow, its total fall is only 896 feet, and its channel is comparatively shallow, its greatest depth being 85 feet. The Volga is free from ice for 200 davs in the year, in Kostroma, Jaroslav, and Kasan for 152. Steamers ply regularly on its waters

between Tver and Nijni-Novgorod, Kasan, and Astrakhan, and from Nijni Novgorod by the Kama to Perm, by the Oka to Riazan, by the Ufa to Ufa, and by the Unsha to Ugor. The three great canal systems of Vishni-Volotchok, Tichvin, and the Marien canal, connecting the Volga with St. Petersburg, and the canal of the Duke of Wurtemberg joining it with the Dwina, made an unbroken water way between the Baltic and the Caspian Sea. A canal to join the Volga with the Don, between Zarizyn and Katchalinsk, was projected by Peter the Great, but was never executed. Its purpose is now effected by the Zarizyn-Kalatsch railway. The Volga has extensive fisheries, chiefly of salmon and sturgeon.

Volt (named in honor of Alessandro Volta), in electricity, the unit which expresses difference of potential. An electrical current is in many respects analogous to a flow of water. The fundamental unit is one of mere quantity, the coulomb, and merely expresses sufficient current to do a certain amount of work. But the same quantity of water would flow through a large pipe at one inch per second, and through one-half the diameter at four inches per second. Hence we get the unit expressing quantity per second (the ampere); and thirdly, as a greater pressure or force is required to drive water at a given rate per second though a small pipe, or greater resistance so as to maintain a given quantity per second, in electrical currents we have this force or pressure, considered as the difference of potential or electrical pressure at the two ends of the circuit of wire. The resistance of a wire to the passage of a circuit is measured in ohms (units), and a volt is the difference of potential required to drive an effective current of one ampere through a wire interposing the resistance of one ohm.

Volta, Count Alessandro, an Italian natural philosopher; born in Como, Italy, Feb. 18, 1745. Two treatises, published in 1769 and 1771, in which he gave a description of a new electrical machine, laid the foundation of his fame. He was successively Professor of Physics at the gymnasium in Como and in the University of Pavia. He invented the electrophorus, electroscope, electrical condenser, electrical pistol, and the voltaic battery in the form known as "crown of cups." He also devised several other electrical appliances, and in 1800 the voltaic pile. To him is due the theory that electricity is generated by the contact of dissimilar metals, a correction of Galvani's animal electricity theory. In 1782 he made a tour through France, Germany, England, and Holland. In 1801 Napoleon invited him to France, where a medal was struck in his honor. In 1810 he was created a senator of Italy, with the title of count; and in 1815 was made director of the philosophical faculty of Padua. Volta's name is perpetuated in a large number of electrical terms. He died in Como, March 5, 1827.

Voltaic Pile, Volta's arrangement for producing a current of electricity, consisting of a pile of alternate disks of two dissimilar metals, as copper and zinc, zinc and silver, zinc and platinum, separated by pieces of flannel or pasteboard moistened with salt water or with water acidulated with sulphuric acid.



VOLTAIC PILE.

Voltaire, the assumed name of Francois Marie Arouet, a French poet, historian, and philosopher; born in Chatenay, near Paris, in 1694. He was educated at the College of Louis le Grand, a celebrated Jesuit institution.

In 1716 he was committed to the Bastille, on suspicion of being the author of a satirical poem on Louis XIV., and remained there a year. His first literary work of mark was the tragedy of "Œdipe," which, with much difficulty, he got represented in 1718. During a visit to Brussels in 1721, he was introduced to Rousseau, but this interview made enemies of them forever. He was sent to the

Bastille a second time, in consequence of a quarrel at the Duke de Sully's house, and after his release, spent three years in England, where the prevalence of free-thinking made an atmosphere congenial to him. Here, in 1728, he published his celebrated epic poem, "La Henriade," under the title of "La Ligue," and applied himself to other literary labors. He rose speedily to the summit of renown as an epic poet; was courted in all the higher circles; and when he returned to France, he found himself a sort of national idol among the French. After the publication of several plays, he retired, about 1735, to Chateau de Cirey, near Vassy, in Champagne, belonging to the Marchioness du Chatelet, a lady celebrated for her love of mathematics and abstruse sciences, and who read Leibnitz and Newton in the original Latin.

During the several years of his residence with Mme. du Chatelet, a connection which Lord Brougham defends as entirely Platonic, he wrote, between other works, his "Elements of the Philosophy of Newton," in which he explained the theories of the great discoverer with clearness, elegance, and learning, though perhaps not always with accuracy. A new epoch opened in his life, when, in 1736, he was flattered by a letter from Frederick, Prince-royal of Prussia, afterward Frederick the Great. These two remarkable men first met after the accession of Frederick to the throne in 1740. The meeting was at a chateau near Cleves, and a second took place soon after at Berlin. For a while, in 1746, Voltaire removed to Paris, where he received the appointment of historiographer of France, and gentleman of the king's bed chamber. He was at the same time received at the Academy. Soon losing favor at the court, he accepted, in 1750, the often renewed invitation of Frederick II. to settle at his court. Frederick received him with transports of joy. He was lodged in the apartments of the Marshal de Saxe; the king's cooks, servants, and horses were placed at his disposal; he was granted a pension of $4,000; and he and the king studied together for two hours a day, while he was welcomed to the king's table in the evening. At first the connection seemed a charming one, but Voltaire soon learned by demonstration, not only that courts are wearisome places, but that Frederick of Prussia and Francois Arouet were too much like each other to become real friends. Their intimacy, chiefly fruitful in jealousies, dissensions, and all kinds of uneasiness, ended after three years by the flight of Voltaire. After a short stay at Colmar, and some trouble about his "Essay on Morals," he settled with Madame Denis at Ferney, then a mere hamlet, near the Genevese territory. There he passed the last 20 years of his life, unwearied in writing, and at the same time active in promoting the interests of the little village, which, under his fostering care, grew up into a neat little town, and became the seat of a flourishing colony of watchmakers. The works of Voltaire are numerous. He died in 1778.

Voltmeter, in electricity, any instrument for measuring the pressure, electromotive force, or difference of potentials at the ends of an electric current. The gold-leaf electroscope is a kind of voltmeter, but will only measure large differences of potential. If the terminals are connected with flat plates arranged parallel to each other, one of which is movable, the attractive force between the plates at a given small distance will be a voltmeter. This method is too coarse for ordinary currents, but a modification of it is employed in Thomson's quadrant electrometer. In Cardew's voltmeter the heating effect of the current in a wire, which varies with the electromotive force, and is measured by the expansion produced, is employed. In the majority of instruments the electro-magnetic action is employed in some form of galvanometer. These are more usually wound to act as ammeters, but if wound with very thin wire the high resistance allows the electromotive force required to drive a certain current through them to be calibrated and denoted in volts. Such instruments are adjusted or calibrated by comparison with a "standard" voltaic cell or voltameter.

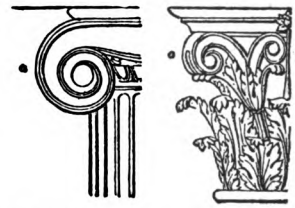
Volume, the space occupied by a body; dimensions in length, breadth, and depth; compass, mass, bulk.

Volunteers of America, a philanthropic and religious organization, inaugurated March 9, 1896, and incorporated Nov. 6 following, of which by the popular vote of its members General Ballington Booth was elected president. Though it was not intended to extend beyond the city of New York, its work of benevolence and sociology has spread till it now reaches almost all the important centers of the United States, besides having representatives in foreign fields. During the fiscal year ending Sept. 1, 1916, the following results were attained, according to a statement prepared by President Ballington Booth covering some 56 homes and benevolent institutions.

The Volunteer workers visited and aided no less than 29,510 families in and around the poorest sections of the large cities. No less than 244,898 persons were lodged in the homes and institutions for working men and women, and many thousands were given temporary relief during the strikes in several sections of the country. There were 820,072 persons fed with substantial meals in the above institutions, apart from those assisted temporarily during the holiday and festival occasions, and 410,103 meals were distributed to persons who paid for them, many doing so by work. In the Volunteer hospital located in New York city, 7,572 new and 12,837 old cases were treated in the Dispensary. During the year also 9,763 days' treatment were given to free patients; 3,909 to public charges, and 574 to pay patients.

The Volunteer Prisoners' League, under the direction of Mrs. Maud Ballington Booth, has embraced upward of 81,000 members since its inauguration of which it is safe to assert that 70 per cent. are leading reformed lives. By correspondence and service it is directly and indirectly in touch, through its subordinate leagues, with the inmates of nearly 30 State prisons. During 1924 it was calculated that 1,485,936 persons attended the Volunteer Sunday and week-night indoor services; while 2,267,117 persons gathered in the open air services.

Volute, in architecture, a kind of spiral scroll used in Ionic, Corinthian, and Composite capitals, of which it is a principal ornament. The number of volutes in the Ionic order is four. In the Corinthian and Composite orders they are more numerous, in the former being accompanied by smaller ones, called helices; called also voluta. In zoölogy, any individual of the genus Voluta.



VOLUTES OF THE IONIC AND CORINTHIAN CAPITALS.

a, volutes; *b*, helix.

Voodoo, or **Voudoo,** a name given by the negroes of the West Indies and the United States to superstitious rites and beliefs brought with them from Africa, and to the sorcerer who practised these rights.

In the Southern States of the Union there was at one time a widespread and deep-rooted belief in the power of these sorcerers. As the negroes advance in education, the belief is dying away. At one time, however, despite all efforts of religious teachers to banish the mastery of this belief from the minds of the slaves, the voodoo "doctor" was an almost omnipotent individual in the estimation of his fellows. No slave could, under any pretext, be persuaded to expose himself to the vengeance or wrath of one of these conjurers. In some cases there was a reasonable foundation for these fears; for in not a few instances has it been proven that some of the voodoos were skillful poisoners, and while the great mass of their professed art was a rank imposture, still they possessed enough of devilish skill to render them objects of wholesome dread. If a negro desired to destroy an enemy, he sought the aid of the voodoo, who, in many cases, would undertake to remove the obnoxious one, and the removal was generally accomplished.

Voorhees, Daniel Wolsey, an American statesman; born in Liberty, O., Sept. 26, 1827; was a member of Congress in 1869–1873, and of the United States Senate in 1877–1897; served on the Senate Committee on Finance during his whole career in that body. He was also a member of the Committee on Library, Immigration, and International Expositions. The erection of the new Congressional Library was largely due to his influence. Owing to his tall and erect figure he was known as the "tall sycamore of the Wabash." He died in Washington, D. C., April 10, 1897.

Voorhees, Philip Falkerson, an American naval officer; born in New Brunswick, N. J., in 1792; joined the navy in 1809; and in the War of 1812, while with the "United States" participated in the capture of the "Macedonia," and while with the "Peacock" in that of the "Epervier." He was promoted captain in 1838, and was assigned to the new frigate "Congress." In 1844 he captured the armed Argentine squadron and an allied cruiser which had fired on a Boston ship. In 1847 he was placed in command of the East Indian squadron, a post equivalent to that of rear-admiral, which rank was not then established. He died in Annapolis, Md., Feb. 26, 1862.

Vosges, a Department of France, formed from the S. part of the old Province of Lorraine; noted for its forests and mineral springs.

Vosges Mountains, a range of hills in the E. of France, bounding the valley of the Rhine on the W. and parallel with the Schwarzwald in Baden. They are connected in the N. with the Hardt in Rhenish Bavaria, in the S. W. with the Faucilles, the Côte-d'Or, and the Cevennes, and in the S. they unite with offsets from the Jura. The summits are usually rounded, hence called ballons, and are covered with a rich green turf, on which for six months of the year large herds of cattle graze. Their sides are clothed with forests of fir, oak, and beech. Their highest summits range from 3,000 to over 4,000 feet, culminating in Ballon de Guebriller, 4,700 feet above the sea.

Vouziers, a town of N. E. France, Department of Ardennes, 24 miles S. of Mezieres, 32 miles N. E. of Rheims, on the Aisne river, near the N. border of the Argonne Forest. It is in a fertile district, has an extensive trade in grain, wine, and iron, and was one of the sufferers by the World War. Pop. about 3,500.

Vowel, a sound uttered by simply opening the mouth or vocal organs; a sound produced by the vibration of the vocal cords. The pitch or tone of a vowel is determined by the vocal cords, but its quality depends on the configuration of the mouth or buccal tube. A, i, and u are by philologists called the primitive vowels, and from them all the various vowel sounds in the Aryan languages have been developed. A vowel differs from a consonant in that the former can be pronounced by itself, while a consonant requires the aid of a vowel to be sounded with it. While there are only 5 vowel characters, yet there are 14 vowel and 5 diphthongal sounds in English.

Vulcan, in mythology, the Roman god of fire and the patron of all metallic handicrafts; the son of Jupiter and Juno, and identical with the Greek Hephæstus. Being extremely ugly and deformed, Juno, ashamed to own such a child, dropped him from heaven, when the infant god, falling into the sea, was rescued and adopted by Thetis, who kept him till nine years of age. He was then restored to his parents. Soon after his return to Olympus, Vulcan took his mother's part in one of the quarrels between husband and wife; Jupiter, enraged at Vulcan's audacity, flung him from heaven. After traveling a whole day, the youth alighted on the island of Lemnos, breaking his ankle in the fall; here he raised forges and workshops, and became the chief of artificers.

Vulcan, in astronomy, the name given to a planet, imaginary or real, between the sun and Mercury. The planet was called by anticipation Vulcan, but its existence still remains unconfirmed though M. Porro and M. Wolf of Zurich reported seeing its transit in 1876.

Vulcanite, a kind of vulcanized caoutchouc, differing from ordinary

vulcanized caoutchouc in containing a larger proportion of sulphur—from 30 to 60 per cent.—and in being made at a higher temperature. It is of a brownish-black color, is hard and tough, cuts easily, and takes a good polish. It is largely used for making combs, dental plates, and other objects.

Vulcanization, the act or process of vulcanizing, or of treating caoutchouc or india-rubber with some form of sulphur, to effect certain changes in its properties; as to render it insensible to atmospheric changes, increase its durability, and adapt it for various purposes in the arts.

Vulgate, the edition of the Latin Bible which, having been sanctioned by the usage of many ages in the Roman Church, was pronounced "authentic" by the Council of Trent. The name was originally given to the "common edition" of the Septuagint used by the Greek Fathers, and thence transferred to the "Itala" or the "Old Latin" version of both Old and New Testaments current during the first centuries in the Western Church. It finally passed to the present composite work, which gradually took the place of the "Old Latin."

The precise import of the term "authentic" applied to the Vulgate has been much discussed by Roman theologians. It is, however, clear that the council intended to make no comparison of the Vulgate with the original texts, but, considering it to be convenient that, among the several Latin versions then current, one should be guaranteed as authentic — i. e., substantially representing the original, and free from all error in faith or morals — declared the Vulgate edition tested by long usage within the Church to be such. The Vulgate thus defined to be an authentic version could not be the particular Clementine edition, which was not then in existence, but the Vulgate generically, or in its purest form. Though the official text is capable of improvement, it is agreed by the best judges that the Clementine editors made use of ancient manuscripts with discernment, and proceeded throughout on sound critical principles.

Vulture, any member of the family Vulturidæ included among the birds of prey. In all the vultures the head and neck are more or less bare, the beak is long and curved only at the tip; the legs and feet are large and powerful, but the toes and claws are relatively weak. They are thus well adapted for walking and feeding on the ground, but are unable to carry off their prey like the eagles and hawks. The wings are very strong, and their powers of swift and sustained flight are remarkable. Vultures are widely distributed throughout temperate and tropical regions, and the general habits of the various species are very similar, though they differ greatly in their choice of haunts. Thus one species frequents the rocky



THE KING VULTURE.

peaks of the Alps and another sweeps over the great plains of Africa; the king vulture dwells alone with his mate in the densest parts of the South American forests, while Pharaoh's chickens pick up a living as street scavengers in the towns of the East.

The chief food of the vultures is carrion; they rarely attack any living animal unless under great stress of hunger, when a wounded or feeble lamb or hare is sometimes killed. There has been much discussion as to whether vultures scent or sight their prey, but experiment has shown, apparently conclusively, that their sense of smell is not unusually acute, and they rely chiefly on their extreme keenness of vision, while the sudden

descent of one bird serves as a signal to many others. When a carcass is discovered by one, others arrive quickly on the scene from all points of the compass, though none may have been visible a few minutes before. Tearing off the skin with their powerful beaks they gorge themselves greedily on the flesh and entrails till nothing is left but the skull and larger bones. Smaller birds only venture to look on and watch for stray morsels which may be let fall, but in the neighborhood of towns the vulture's claim is sometimes — not often successfully — disputed by wandering dogs. After a full meal vultures may remain without food for many days. The young birds, which are carefully tended for several months, are fed by regurgitation of food from the crop of the parents.

One of the commonest European species is the griffin vulture, which occurs in Spain, among the Alps, and in the Mediterranean region generally. It makes a rough nest of branches and grasses, usually in a cavity or on a ledge of an almost inaccessible cliff. One, or at most two eggs are laid early in March, and the parents share the labor of rearing and tending the young. The adult bird measures 3½ feet in length; the general color is light brown with black markings, and there is a white ruff on the lower part of the neck. The eared vulture, an inhabitant of Africa, received its name from folds of skin on the head resembling ear-lappets. The Egyptian vulture is often called Pharaoh's chicken from its frequent occurrence in ancient Egyptian hieroglyphics, where it is used as an emblem of parental love. It is very common throughout Northern Africa and Persia, and breeds frequently in the S. of Europe. More than one specimen has been killed in England. The Egyptian vulture is raven-like in form; its wings are pointed, its bill slender, and half covered with a naked cere. The adult bird is little over 2 feet in length; its plumage is white with black wing-feathers.

W

W, the 23d letter of the English alphabet. It takes its form and its name from the union of two V's, the character V having formerly the name and force of U. The name "double u" is not, however, a very suitable one, being given to the letter from its form or composition, and not from its sound. In the Anglo-Saxon alphabet W had a distinctive character of its own, the modern letter being adopted in the 13th century. W represents two sounds: (1) The distinctive sound properly belonging to it, being that which it has at the beginning of a syllable, and when followed by a vowel, as in was, will, woe, forward, housework, etc.; (2) at the end of syllables, in which position it is always preceded by a vowel, it has either no force at all (or at most only serves to lengthen the vowel), as in law, paw, grow, lawful, etc.; or it forms the second element in a diphthong, as in few, new, now, vow, etc., being in such cases really a vowel, and equivalent to the u in bough, neutral, etc. It is formed by opening the mouth with a close, circular configuration of the lips, the organs having exactly the same position as they have in pronouncing the oo in foot.

Waco, city and capital of McLennan county, Tex.; on the Brazos river and the Texas Central and other railroads; 95 miles N. E. of Austin; is an important commercial and manufacturing center, one of the largest cotton markets in the State, and in a section chiefly devoted to cotton-growing and stock-raising; and is the seat of Baylor University (Bapt.), Texas Christian University, and St. Basil's (R. C.) and Paul Quinn (A. M. E.) Colleges. Population (1930) 52,848.

Wadai, or **Waday,** extensive and powerful negro State in Central Sudan; between Kanem and Bagirmi on W. and Darfur on E.; area 170,000 sq. miles; pop. 2,000,000; cap. Abeshr. Came under French control in 1903.

Waddell, James Iredell, an American naval officer; born in Pittsboro, N. C., July 13, 1824; entered the United States navy in 1841. In 1862 he joined the Confederate navy; served on several missions; and in 1864 took command of the "Shenandoah" and began a piratical warfare on American shipping on the high seas, capturing 38 ships. After the war he returned to the United States, and was for a time a captain in the service of the Pacific Mail Steamship Company. He died in Annapolis, Md., March 15, 1886.

Wade, Benjamin Franklin, an American statesman; born in Springfield, Mass., Oct. 27, 1800. About 1821 he removed to Ohio, where he was employed as a school teacher for several years. He studied law and was admitted to the bar in 1825. In 1837 and 1841 he was elected State Senator; in 1847 was chosen presiding judge of the 3d Judicial District of Ohio; and in 1851, 1857, and 1863, was elected United States Senator. He was an advocate of the Homestead bill, voted for the repeal of the Fugitive-Slave Law, and opposed the Nebraska-Kansas bill of 1854. During the Civil War he was prominent in public affairs. In the session of 1861–1862 he was appointed chairman of the Joint Committee on the Conduct of the War. He also served as president of the Senate and acting Vice-President of the United States.

Excepting to serve as a commissioner to Santo Domingo, he took no prominent part in public affairs after 1869. He died in Jefferson, O., Mar. 2, 1878.

Wade, James F., an American military officer; born in Ohio, April 14, 1843; entered the Union army as 1st lieutenant in the cavalry in 1861; served with distinction throughout the Civil War; was brevetted colonel and Brigadier-General of volunteers in 1865; commissioned major of the 9th Cavalry, U. S. A., in 1866; promoted colonel in 1891, and Brigadier-General in 1897; and in May, 1898, was appointed a Major-General of volunteers. After the war with Spain, in which he took an active part, he was placed at the head of the Cuban Evacuation Commission; in 1899, became military governor of Cuba; in 1903–04 commanded in the Philippines; in 1904–07 commanded the Atlantic Division; then was retired.

Wadleigh, George Henry, an American naval officer; born in New Hampshire, Sept. 28, 1842; was graduated at the United States Naval Academy in 1863, and assigned to duty in the West Gulf Blockading squadron, where he remained till the end of the Civil War. During the Spanish-American War he was in command of the flagship "Philadelphia" on the Pacific station and was afterward assigned to the command of the receiving ship "Wabash" at the navy yard at Boston; retired in 1902.

Wadlin, Horace Greeley, an American librarian; born in Wakefield, Mass., Oct. 2, 1851; became chief of the Massachusetts Bureau of Statistics of Labor in 1888; held a seat in the Massachusetts Legislature in 1884–88; was supervisor of the U. S. census in 1890 and 1900, and of the State census in 1895; librarian Boston Public Library from 1903.

Wadsworth, James Samuel, an American military officer; born in Geneseo, N. Y., Oct. 30, 1807; was educated at Harvard and Yale; studied law with Daniel Webster, and was admitted to the bar in 1833. He enlisted as a volunteer in the Union army early in 1861; was appointed a Brigadier-General in August; and became military governor of the District of Columbia in March, 1862. He was engaged in the battles of Fredericksburg, Chancellorsville, Gettysburg, and the Wilderness as the commander of a division, and was killed in the last named battle, May 6, 1864.

Wafer, a name given to the small piece of unleavened bread used in the sacrifice of the Mass, and called after consecration the Host.

Wafers, thin disks of adhesive matter, formerly much used for securing letters, and still in use for attaching papers to each other, for legal seals, etc.

Wager, in law, a promise to give money or money's worth on the happening of an uncertain event. Every contract of insurance is in the nature of a wager, but such contracts are permitted, because they serve useful purposes. In the United States gaming contracts are in most States void, and money paid or property delivered on such considerations may generally be recovered.

Wages, the payment for work done or services performed; the price paid for labor; the return made or compensation paid to those employed to perform any kind of labor or service by their employers; hire, pay, recompense, meed. The rate of wages is determined by the ratio which the capital, for the productive use of which labor is sought, bears to the number of laborers seeking that kind of employment. When the capital increases more rapidly than the laboring population of the country wages rise; when it increases more slowly they fall. But in the United States and most countries, the rise of wages produces an increase in the number of marriages, and in due time of population, with the result of ultimately causing wages to again fall. This is the theory of the wage system, and carried to its logical extreme, it has reduced multitudes of wage-earners in China, Russia, and other countries to a condition but little removed from slavery. The trades unions have changed all this, however, in the United States and Great Britain, and other countries where a man is really a man, and wages are now fixed, as a rule, in the countries indicated, by the unions, through amicable arrangement with employers.

Wagnalls, Mabel, an American pianist and author; born in Kansas

City, Mo., April 20, 1871. She made her first appearance in New York city, Jan. 11, 1891, with the Theodore Thomas orchestra, and in the following year played with Anton Seidl's orchestra. She was the author of "Miserere: A Musical Story," "Stars of the Opera," etc.

Wagner, Arthur Lockwood, an American military officer; born in Ottawa, Ill., March 16, 1853; was graduated at the United States Military Academy in 1875; was promoted lieutenant-colonel in 1896; and in 1897 was placed in charge of the military information division of the War Department at Washington. In the Spanish-American War he served in Cuba, and afterward commanded at Southern Luzon, Philippines. He died in 1905, as he was about to be made a Brigadier-General.

Wagner, Charles, French evangelist and author; born Alsace, 1852. Inculcating simple Christianity divested of dogmatism, as author of "The Simple Life," "Youth," "Courage," etc., he achieved wide popularity. He lectured in the U. S. in 1904.

Wagner, Wilhelm Richard, a German operatic composer; born in Leipsic, May 22, 1813. In 1836 he was conductor at Magdeburg, and after spending some time in Konigsberg, Dresden, and Riga, successively, he went to Paris in 1841. Here he composed or completed his "Rienzi" and "Der fliegende Hollander," (Flying Dutchman). "Rienzi" obtained for him the post of assistant conductor (with Reissiger) at Dresden. His "Tannhauser" appeared in 1845. He spent the season of 1855 in London as conductor of the Philharmonic Society's concerts. In all his operas the words of the libretto are of his own composition, and far superior, from the poetic standpoint, to the majority of works intended for such use. Wagner was a musical revolutionist and reformer in many ways affecting the opera. Like other reformers and iconoclasts in other spheres and times, his methods and theories will doubtless be modified by the future. Meantime he may safely be ranked as the greatest musician who has arisen since Beethoven, and his probable influence on future operatic compositions can scarcely be overestimated. The following is a list of dates of first performances of his remaining dramatic works: "Lohengrin," (1850); "Tristan and Isolde," 1865; "Meistersinger," 1868; "Das Rheingold," 1868; "Die Walkure," 1870; "Siegfried," 1876; "Die Gotterdammerung," (The Dusk of the Gods), 1876; "Parsifal," 1882. Died in Venice, Feb. 13, 1883.

Wagtail, a name of birds included in the family of the warblers, and so termed from their habit of jerking their long tails when running or perching. They inhabit meadow lands and pastures, frequent water pools and streams, are agile runners, and have a rapid flight. The food consists of insects. Their nests, built on the ground, contain from four to six eggs. These birds belong to both Old and New Worlds, and migrate S. in winter.

Wahabi, or **Wahabee,** in the plural in Mohammedanism, a sect founded by Abdul Wahhab, born toward the end of the 17th century, near Der'aiyeh, the capital of Nejd, in Arabia. Abdul Wahhab felt it a duty to make a determined effort to restore Mohammedanism to its pristine purity, and the most earnest Moslems gradually became his followers. Converting to his views Mohammed Ibn Saud, the powerful Sheikh of Der-'aiyeh, whose daughter he married, he induced his father-in-law to draw his sword for the establishment of a pure Mohammedan theocracy.

The Bedouins flocked to his standard; the towns of Arabia, less inclined to adopt the new faith, had to be conquered. In A. D. 1765 (1172 of the Hegira) the father-in-law died, and on June 14, 1787 (A. H. 1206), the revivalist or reformer. Under their successors, with the exception of the territory subject to the Imam of Muscat, all Arabia submitted to the Wahabees. The same year Mehemet Ali, Pasha of Egypt, prepared to attack them. In 1812 he took Medina, and in 1813 Mecca. In 1816 Ibrahim Pasha, the son of Mehemet Ali, assumed the command of the Egyptian troops and entering Arabia, took Der-'aiyeh in 1818, and capturing Abdullah, son and successor of Saud, sent him to Constantinople, where he was beheaded. The Wahabee movement is not now confined to Arabia; it has spread throughout the Mohammedan

world, and though quiescent at present, still possesses vigorous life, and will doubtless again from time to time break forth. Many adherents of the sect are believed to exist in India, Patna being considered one of their strongholds.

Wahoo, an ornamental shrub, often called burning bush or spindle tree. The name is also given to the winged elm, a small tree of the S. and W. parts of the United States, the hard and close-grained wood of which is used for the hubs of wheels, etc.

Wainwright, Jonathan Mayhew, an American clergyman; born of American parents in Liverpool, England, Feb. 24, 1793; was graduated at Harvard College in 1812; studied theology and was ordained in the Protestant Episcopal Church in 1818; settled in New York city in 1819; and was there rector of Grace Church in 1821–1834. Three years later he was made assistant in charge of St. John's Chapel, and remained there till November, 1852, when he was consecrated provisional bishop of New York. He was one of the founders of the University of New York, and was deemed one of the most eloquent pulpit orators of his time. He died in New York city, Sept. 21, 1854.

Wainwright, Richard, an American naval officer; born in Washington, D. C., Dec. 17, 1849; was graduated at the United States Naval Academy in 1868; promoted commander in 1889; served on various stations and duties and was the executive officer on the battleship "Maine" when she was blown up in Havana harbor in 1898. He commanded the converted yacht "Gloucester" in the war with Spain; took part in the destruction of Cervera's squadron, July 3, 1898; destroyed the Spanish torpedo boats "Furor" and "Pluton" during the fight; in 1900 became superintendent of the United States Naval Academy; in 1908, rear-admiral; retired 1911.

Waite, Charles Burlingame, an American author; born in Wayne co., N. Y., Jan. 29, 1824; was admitted to the bar in 1847; settled in Chicago and practised there till 1862; was associate justice of the Supreme Court of Utah in 1862–1865 and district attorney for Idaho in 1865–1866. He then returned to Chicago and engaged in literary work. Died 1909.

Waite, Morrison Remick, an American jurist; born in Lyme, Conn., Nov. 29, 1816; was graduated at Yale University in 1837; studied law and practised in Ohio; member of the Ohio legislature 1849–1850; in 1871 was appointed one of the attorneys to represent the United States before the tribunal of arbitration at Geneva; nominated by President Grant to be chief justice of the United States Supreme Court in 1874, and was unanimously confirmed by the Senate. He died in Washington, D. C., March 23, 1888.

Wake Forest College, an educational institution in Wake Forest, N. C.; founded in 1833 under the auspices of the Baptist Church.

Wakeman, Antoinette Van Hoesin, an American journalist; born in Cortland co., N. Y., Dec. 4, 1854; was educated at the Woman's College, Evanston, Ill.; was a correspondent and writer for the St. Paul "Pioneer Press," the Minneapolis "Journal" and the Chicago "Times" and "Tribune"; served for four years on the editorial staff of the Chicago "Evening Post." During the World's Columbian Exposition she was chairman of the committee on program for the Woman's Press Auxiliary Congress.

Wakemanites, a small party of fanatics existing at New Haven, Conn., in 1855, who regarded an old and apparently insane woman, named Rhoda Wakeman, as a divinely commissioned prophetess, who had been raised from the dead. At her bidding, some of her followers murdered a farmer, Justus Matthews, who, she said, was possessed by an evil spirit. The unfortunate man willingly submitted to the sentence pronounced by the pseudo-prophetess, but the extinction of the sect followed as a matter of course.

Walcott, Charles Doolittle, an American scientist; born in New York city, March 31, 1850; early devoted himself to geological research; became assistant geologist in the United States Geological Survey in 1879; presented the results of his Cambrian researches before the International Geological Congress in London in 1888; director

of the United States Geological Survey in 1894–1907; honorary curator of the Department of Palæontology from 1892; acting Assistant Secretary of the Smithsonian Institution in 1897–1898, and Secretary from 1907; Secretary of the Carnegie Institution in 1902–1905; director U. S. Reclamation Service in 1905–07; and president of the Washington Academy of Sciences in 1899–1910.

Waldeck-Rousseau, Pierre Marie Ernest, a French statesman; born at Nantes, in 1846. He became a barrister; was elected deputy for Rennes in 1879; and in 1881, Gambetta, who recognized his ability, made him Minister of the Interior, an office which he again held under Jules Ferry, 1883-5. He was elected Senator for the Department of the Loire in 1894, and in 1895 was a candidate in opposition to Messieurs Faure and Brisson for the Presidency of France. He became Premier in 1899, and with a composite cabinet, while establishing order among the various opposing factions in the Republic, maintained the longest tenure of the Premiership since the establishment of the Third Republic, resigning in June, 1902. He died Aug. 10, 1904.

Walden, Treadwell, an American clergyman; born in Walden, N. Y., April 25, 1830; received a collegiate education and was graduated at the General Theological Seminary in 1853; was ordained in the Protestant Episcopal Church in 1856; held pastorates in New Jersey, Pennsylvania, Indiana, Massachusetts, and Minnesota. Made a member of the United States Sanitary Commission (1864).

Waldenses, a famous Christian community which originally grew out of an antisacerdotal movement originated by Peter Waldo, of Lyons, France, in the second half of the 12th century. The tenets ascribed to his followers in the earliest accounts are chiefly that oaths even in a court of justice are not allowable, that homicide is under no circumstances justifiable, that every lie is a mortal sin, that all believers are capable of priestly functions, and that the sacraments are invalidated by uncleanness of life in the officiating priest. Episcopal and Papal fulminations were launched against them, but it was impossible to compel silence, for the missionary zeal of these sincere enthusiasts was boundless, and their influence quickly grew. Alonzo II. of Aragon ordered them to quit his dominions in 1194, and in Southern France they became involved in the common destruction of the Albigenses, though their quarrel with the Church differed from that of the latter in relating to matters of practice rather than of doctrine.

But under persecution their divergences from the Church naturally grew ever the greater, and we find that gradually, though never uniformly, they came to repudiate the invocation of the Virgin and saints, transubstantiation, and purgatory with all its consequences. Yet they themselves maintained a kind of order of preachers living in voluntary poverty and celibacy. During the years 1336–1346 especially they were severely harassed; 12 were burned in front of the cathedral at Embrun in 1348. Popes Clement VI. and Urban V. stimulated the zeal of the Inquisition, and we read how the fierce Inquisitor, Francois Borel, burned 150 at Grenoble in one day in 1393. Their remnants in France continued to cherish their own faith, more or less under disguise of Catholicism, till they finally merged with the Calvinists after the Reformation.

The 18th century was not a favorable age for persecution, yet even at its close the Waldenses could hold no office nor real estate, nor have physicians of their own faith in Italy. Napoleon allowed their Church a constitution, but this Victor Emmanuel abolished in 1814, though two years later, urged by England and Prussia, he issued a milder edict. Meantime they prospered — Col. John C. Beckwith (1789–1862), who had lost a leg at Waterloo, having perused Dr. Gilly's "Visit to the Valleys of Piedmont" (1823), settled among the people for the last 35 years of his life, marrying a peasant girl, and succeeded in establishing as many as 120 schools. At last in 1848 Charles Albert gave the Waldenses equal political and religious rights, and since that time their progress has been constant if not rapid. In 1889–1890 they had in Italy 44 churches, and 53 stations, 58 pastors and evangelists, and a theological school at Florence.

Walden University, a coeducational institution in Nashville, Tenn.; founded in 1867 under the auspices of the Methodist Episcopal Church.

Waldersee, Alfred Heinrich Carl Ludwig, Count von, a German military officer; born in Potsdam, Germany, April 8, 1832; entered the army in 1850; served with distinction in the campaign of 1860 and in the Franco-Prussian War; became Major-General in 1876, general in 1880, quartermaster-general in 1881, Lieutenant-General in 1882, general of cavalry in 1888; and succeeded Von Moltke as chief of the general staff of the German army in August, 1888. In 1895 he was promoted Field-Marshal, and in 1900 was chosen commander of the allied armies in China. His wife, Mary, born in New York city, Oct. 3, 1837, was a daughter of David Lee, spent her early years in Paris with her sister Josephine, and there married Prince Frederic of Schleswig-Holstein-Sonderburg-Augustenburg-Noer, 1864. On the death of her husband in July, 1865, she returned to Paris, where she remained till 1870, when she removed to Wurtemberg, Germany. In 1871 she married Count von Waldersee. She was credited with having brought about the marriage of Emperor William II. with the Princess Augusta Victoria. Count von Waldersee died Mar. 6, 1904.

Waldo, Frank, an American meteorologist; born in Cincinnati, O., Nov. 4, 1857; was graduated at Marietta College in 1878 and pursued post-graduate studies at Harvard University in 1880–1882 and then spent a year in Europe. Returning to the United States he was instructor of astronomy at Radcliffe College and later of meteorology at the Corcoran School of Science, Columbian University. He then became a junior professor in the United States Signal Service.

Waldstein, Charles, an American educator; born in New York city, March 30, 1856; was educated at Columbia University, and graduated at the University of Heidelberg in 1875; was made Professor of Fine Arts at King's College, Cambridge, England, in 1893; served as director of the American School of Classical Studies in Athens in 1889–1895; and was professor there in 1895–1897. He had charge of the excavations of the American Archæological Institute at Eretria, Platæa, Heraion of Argos, etc.

Wales, a principality in the S. W. of the island of Great Britain, which since Edward I. gives the title of Prince of Wales to the heir-apparent of the British crown; area, 7,442 sq. m.; the population in 1921 was 2,206,712. It is divided into 12 counties. As a whole it is very mountainous, particularly in the N., where Snowdon, the culminating point of South Britain, rises to the height of 3,571 feet; and it is intersected by beautiful valleys, traversed by numerous streams, including among others the large river Severn. It is rich in minerals, particularly coal, iron, copper, and even gold, and to these Wales owes its chief wealth. The coal trade is most extensive, and Cardiff is the largest coal port in the world. In 1923, 273,501,000 tons of coal were produced in England and Wales. All metal works are also on a large scale. Besides the mineral industries, there are considerable woolen manufactures, especially of flannel, coarse cloth, and hosiery. The Welsh have many strange customs and peculiar superstitions. They are remarkably fond of poetry and music, and their language is said to be peculiarly adapted to poetical effusions. Their ancient language is, however, falling fast into disuse throughout the principality, more especially the S. part. Family distinction is held in great estimation. The aboriginal Celtic race still inhabits some parts of the country. Llewellyn ap Gryffydd was the last prince who exerted himself for the independence of Wales. In 1282 he was subdued by Edward I., and fell on the field of battle. From that time, Wales has been annexed to the English crown; but the union was not complete till the reign of Henry VIII., when the government and laws were assimilated with those of England.

Wales, Prince of, the principal title of the eldest son, or, in the event of his death, the grandson, of the reigning sovereign of England, but not necessarily of the heir-apparent to the crown, *e. g.*, James I., William IV., or Ernst August of Hanover. The last native who held it was Llewellyn ap Gruffyd (1246–1282)

two years after whose death it was conferred, so runs the tradition, by Edward I. on his second son, in fulfilment of his promise to the Welsh chieftains that he would give them a prince born in their midst and unable to speak a word of English. Presenting to them the infant Edward of Caernarvon, he pronounced the words *Eich Dyn* ("This is your man"), the origin of the motto *Ich dien*, which another tradition refers with equal probability to the German motto *Ich diene* ("I serve") of King John of Bohemia, slain by the Black Prince at Cressy (1346). To the Princedom of Wales are annexed, in England, the Duchy of Cornwall and Earldom of Chester; in Scotland, the Duchy of Rothesay, Earldom of Carrick, Barony of Renfrew, and Lordship of the Isles, with the titles of Prince and High Steward of Scotland; and in Ireland, the Earldom of Dublin. The Prince of Wales in 1925 is Edward Albert, son of King George V. and Queen Victoria Mary; born June 28, 1894; early entered the royal navy as a cadet; became Duke of Cornwall on the accession of his father; and was created Prince of Wales and Earl of Chester, 1910. He achieved immense popularity by tours through every state of empire.

Walke, Henry, an American naval officer; born near Portsmouth, Va., Dec. 24, 1808; was appointed to the navy in February, 1827; and took part in the Mexican War. Immediately prior to the outbreak of the Civil War in 1861, he took measures which prevented the occupation of Fort Pickens by the Confederates. He served with distinction throughout the war; participated in the battle of Fort Henry, for which he received the thanks of the Secretary of War, of Congress, and of the State of Ohio; opened the battle of Fort Donelson and was the last to retire from the front line of battle; took part in the bombardment of Island No. 10, when he voluntarily ran the gauntlet of the Confederate batteries and captured the batteries below the island; and commanded the second division of the fleet at the battle of Grand Gulf, silencing the main fort on Point of Rocks. On April 26, 1881, he was retired at his own request to hasten the promotion of junior officers. He died in Brooklyn, N. Y., March 8, 1896.

Walker, Alexander Joseph, an American editor; born in Fredericksburg, Va., Oct. 13, 1819. He successively edited the New Orleans "Delta," "Times," "Jeffersonian," "Herald," and "Picayune," and subsequently the Cincinnati "Enquirer." He died in Fort Scott, Ark., Jan. 24, 1893.

Walker, Amasa, an American political economist; born in Woodstock, Conn., May 4, 1799. He was for many years engaged in commercial pursuits; from 1842 to 1848 lectured on political economy at Oberlin College. In 1862–1863 was Republican member of Congress from Massachusetts. From 1858 to 1869 he was lecturer on political economy at Amherst College. He wrote: "Nature and Uses of Money and Mixed Currency," and "The Science of Wealth." He died in North Brookfield, Mass., Oct. 29, 1875.

Walker, Asa, an American naval officer; born in Portsmouth, N. H., Nov. 13, 1845; was graduated at the U. S. Naval Academy in 1866; promoted commander in 1894; assigned to the command of the "Concord" in 1897, and with her engaged in the battle of Manila Bay, May 1, 1898; promoted captain in 1899, he was at the Naval War College, Newport, R. I., till 1900; made superintendent of the Naval Observatory in 1906; retired in 1907. He died March 7, 1916.

Walker, Francis Amasa, an American educator; born in Boston, Mass., July 2, 1840; was graduated at Amherst College in 1860; served throughout the Civil War, distinguishing himself on various fields. On Aug. 25, 1864, he was captured at Ream's Station, and for a short time was detained in Libby Prison; was promoted colonel Dec. 23, 1862, and received the brevet of Brigadier-General of volunteers March 13, 1865; was superintendent of the 9th census in 1870–1879; became Professor of Political Economy in the Sheffield Scientific School of Yale University in 1873; and in the latter year accepted the presidency of the Massachusetts Institute of Technology, where he served till his death, Jan. 5, 1897. He was the author of "The Indian Question" "Money," "Money, Trade, and Industry,"

"Political Economy," "History of the Second Army Corps," etc. Died 1897.

Walker, James, an American educator; born in Burlington, Mass., Aug. 16, 1794. He became Professor of Moral and Intellectual Philosophy in Harvard College in 1839; was president in 1853–1860; and editor of the "Christian Examiner" in 1831–1839. He was famous as a pulpit orator. There is a mural monument dedicated to him in the Harvard Church in Charlestown, Mass. He died in Cambridge, Mass., Dec. 23, 1874.

Walker, James, an American artist; born in England, June 3, 1819; settled in New York city early in life and lived there till 1884, when he went to San Francisco to execute a French battle piece for a private gallery. He became widely known as a painter of historico-military pictures. Died in Watsonville, Cal., in September, 1889.

Walker, John Grimes, an American naval officer; born in Hillsboro, N. H., March 20, 1835; was graduated at the United States Naval Academy in 1856. During the Civil War he participated in the capture of New Orleans and the operations against Vicksburg in the summer of 1862; was executive officer on board a gunboat at the capture of Wilmington, N. C., and took an active part in several other engagements. He was secretary of the Lighthouse Board in 1873–1878; chief of the Bureau of Navigation in 1881–1889; promoted commodore in 1889; commanded the "Squadron of Evolution" in 1889–1894; and in the latter year, on his promotion to rear-admiral, was assigned to the Pacific station; being particularly charged with the maintenance of peace and good order in the Hawaiian Islands. He was chairman of the Lighthouse Board in 1895–1896; and was appointed president of the Isthmian Canal Commission in 1899. He died in 1907

Walker, Robert John, an American financier; born in Northumberland, Pa., July 23, 1801; was graduated at the University of Pennsylvania in 1819. He entered politics and was elected to the United States Senate from Mississippi in 1836 and 1840. On the accession of James K. Polk to the presidency in 1845, he was appointed Secretary of the Treasury, and continued in that office till March, 1849, during which period he prepared and carried through the tariff bill of 1846, various loan bills, the warehousing system, the Mexican tariff, and a bill to organize the Department of the Interior. Subsequently he was governor of Kansas, was actively occupied in the support of the National government prior to the Civil War, advocating the immediate reënforcement of Southern fortifications and the maintenance of the Union by force; and in 1863 was sent as financial agent of the United States to Europe, where he negotiated the sale of $250,000,000 in 5-20 bonds. He died in Washington, D. C., March 11, 1869.

Walker, Sears Cook, an American astronomer; born in Wilmington, Mass., March 28, 1805; was graduated at Harvard College in 1825. From 1847 till his death he had charge of the longitude computations of the United States Coast Survey, and in this connection he developed with Professor Bache the method of determining differences of longitude by telegraph, which was first put into successful operation in 1849. He died in Cincinnati, O., Jan. 30, 1853.

Walker, William, a noted American filibuster, born at Nashville, Tennessee, 1824; was editor of the San Francisco Herald; led a revolutionary expedition to Central America, and was for some time successful in establishing a military despotism in Nicaragua, until driven out He surrendered to a British naval captain, who gave him up, and was shot by order of court martial Sept. 22, 1860.

Walker, Williston, an American clergyman; born in Portland, Me., July 1, 1860; was graduated at Amherst College in 1883 and at Harvard Theological Seminary in 1886; Professor of Church History in Hartford Theological Seminary in 1899–1901; then of Ecclesiastical History at Yale.

Walking Delegate, a peripatetic official of a trade union, whose duty it is to visit the various places at which members of his craft are employed, and personally ascertain that no laws of that particular trade guild are infracted by the workmen; also, in cases where an unexpected strike has been ordered by the executive board, it devolves on him to notify

men connected with the union to cease work at the place indicated.

Wallace, Alfred Russel, an English naturalist; born in Usk, Monmouthshire, England, Jan. 8, 1823; was educated at Hertford grammar school. He spent many years in traveling, especially in South America and the Asiatic Islands. His observation of animal life early led him on the track of natural selection, and before Darwin gave his famous work to the world he had published "Speculations on the Origin of Species." Wallace differed from Darwin on the subject of the intellectual, moral, and spiritual nature of man, and claimed to be at once a Darwinian and an anti-materialist. He was president of the Land Nationalization Society and a member of various scientific bodies. The Royal Society of London awarded him the royal medal in 1868, and the Geographical Society of Paris the gold medal in 1870. He wrote many scientific works. He died Nov. 7, 1913.

Wallace, Lewis (better known as Lew), an American military officer and author; born in Brookville, Ind., April 10, 1827; was lieutenant in the Mexican War in 1846–1847; took a distinguished part in the Civil War in which he served in the campaigns in West Virginia and Kentucky; commanded a division at the capture of Fort Donelson; led the attack in the second day's fight in the battle of Shiloh; took part in the subsequent advance on Corinth; saved Cincinnati, O., from capture by Gen. E. Kirby Smith; and was president of the court appointed to investigate the conduct of General Buell. In 1864 he commanded the Middle Department and the 8th Army Corps, and in the battle of Monocacy (July 9, 1864), prevented the capture of Washington and Baltimore by General Early. He was a member of the commission which tried the assassins of President Lincoln, and in the same year presided over the court which tried Captain Wirz, the commandant of the Andersonville prison. In 1866 he was sent to Mexico on a secret diplomatic mission to President Juarez; was appointed governor of New Mexico in 1880; and was United States Minister to Turkey in 1881–1885. When not engaged in public service he practised law and devoted himself to literature. His publications include: "The Fair God"; "Ben Hur, a Tale of the Christ"; "The Prince of India," etc. He died at Crawfordsville, Ind., Feb. 15, 1905.

Wallace, Sir Richard, an English philanthropist; born in London, England, July 26, 1818; removed to Paris; and became heir to the large fortune of the Marquis of Hertford, including a very valuable collection of paintings and other objects of art, to which he made large additions and which his widow bequeathed in 1897 to the nation. It is valued at $25,000,000 and is permanently on exhibition in Hertford House (the original of Gaunt House in "Vanity Fair"). Sir Richard was well known for his extensive benefactions, especially during the period of the Paris Commune, and these services were recognized in 1871 by his elevation to a baronetcy and his appointment as a commander of the Legion of Honor. In 1873 he was elected to Parliament. He died in Paris, July 20, 1890.

Wallace, Susan Arnold Elston, an American author; wife of Gen. Lewis Wallace; born in Crawfordsville, Ind., Dec. 25, 1830; was married to Gen. Wallace in 1852. Besides contributing to periodicals and reviews, she published: "The Storied Sea," "The Land of the Pueblos," "The Repose in Egypt," etc. D. 1907.

Wallace, Sir William, a Scotch patriot; born in Ayrshire, Scotland, about 1274. Having slain the son, and several of the retainers of the English sheriff of Dundee, for an insult offered to him, Wallace fled to the woods, and was outlawed. Gathering together a number of followers, he drove the English out of Aberdeen, Forfar, Brechin, and elsewhere, and in 1297 defeated the English army at the battle of Stirlingbridge — thus liberating his country for a time. He was chosen one of the commanders-in-chief of the Scotch army, and afterward guardian of the kingdom, during the captivity of Baliol. He penetrated into England, and ravaged Durham with fire and sword. Edward I., then in Flanders, immediately hastened home, and marched against Wallace, who was defeated. He carried on a guerilla warfare against the English during several

years, was betrayed, and executed in London, Aug. 24, 1305.

Wallace, William Ross, an American lawyer and poet; born in Lexington, Ky., in 1819. "The Liberty Bell" is his best-known poem. Died in New York city, May 5, 1881.

Wallack, James William, an American actor; born in London, England, Aug. 24, 1795. He came to the United States in 1818, and on Sept. 7 made his first appearance in New York city in the Park theater as Macbeth. He became stage manager of the Drury Lane theater in 1820; opened the National theater in New York city and managed it till it was destroyed by fire in 1839; opened Wallack's Lyceum in 1852 and in 1861 built Wallack's theater in New York city. He died in New York city, Dec. 25, 1864.

Wallack, Lester John, an American actor and manager, son of James William Wallack; born in New York, Jan. 1, 1820. He conducted Wallack's Theater, New York city, for 24 years; was identified with the American stage for more than 40 years; and on his retirement in May, 1888, was the recipient of an unequalled dramatic testimonial. He wrote the plays "The Veteran" and "Rosedale." He died Sept. 6, 1888.

Walla Walla, city and capital of Walla Walla county, Wash.; on the Walla Walla river and branches of the Northern and Union Pacific railroads; 200 miles S. W. of Spokane; is the trade center of a large farming area and an important shipping point of grain; manufactures chiefly farm implements and machinery; and contains Whitman College (Cong.), Walla Walla College, De la Salle Institute, St. Vincent's Academy, St. Paul's Seminary (P. E.), St. Patrick's School, and the State Penitentiary, while adjoining the city is the military post of Fort Walla Walla. Pop. (1930) 15,976.

Wallenstein, Albrecht Wenzel Eusebius, Count von, the great general of the Imperialists, in the Thirty Years' War; born in 1583; alone and with Tilly more than once raised the empire from the verge of ruin by his counsel and skill as a commander. When Gustavus Adolphus of Sweden invaded the empire with his Protestant army, Wallenstein armed and equipped 50,000 men at his own cost, and, advancing against the successful enemy, drove Gustavus out of Bavaria, and following him into Saxony, forced him at Lutzen to hazard a pitched battle, in which, though the Imperialists were defeated, the death of Gustavus, who fell in the moment of victory, was considered an ample equivalent. The death of the Swedish king made the rest of the war easy, and by Wallenstein's vigilance the empire was again saved. Ferdinand, now firmly seated on his throne, became envious of the man to whom he owed both life and crown, and, taking offense at the devotion of Wallenstein's officers, accused their chief of treason, and issued an order to take him dead or alive. On this Wallenstein fled with a party of friends to the Castle of Egar, where its commander treacherously murdered him and all his devoted friends in 1634.

Wallflower, the common name of a species of plants. They are biennial or perennial herbs or undershrubs. Many of them exhale a delicious odor, and are great favorites in gardens. The best known is the common wallflower, which, in its wild state, grows on old walls and stony places. In the cultivated plants the flowers are of more varied and brilliant colors, and attain a much larger size than in the wild plant, the flowers of which are always yellow.

Wallis, Sir Provo William Parry, a British naval officer; born in Halifax, Nova Scotia, April 12, 1791. He served in the British navy against the French, and in 1813 was 2d lieutenant on the "Shannon" which captured the United States frigate "Chesapeake" off Boston, on June 1, in the engagement in which Capt. James Lawrence was killed. The captain of the "Shannon" being severely wounded and the 1st lieutenant killed, Wallis took command and carried the "Chesapeake" to Halifax. For his part in the encounter he was promoted commander. He became rear-admiral in 1851, vice-admiral in 1857, admiral of the White in 1863, and admiral of the fleet in 1877. By special order of Queen Victoria, he was retained in the service after passing the age of retire-

ment, 70 years. He died near Chichester, England, Feb. 13, 1892.

Walloons, or Wallons, lineal descendants of the old Gallic Belgæ, who occupy the Belgian provinces of Hainault, Liege, Namur, and part of Southern Brabant and Western Luxembourg. They are superior in physique to their Flemish compatriots, and a large proportion of them have black hair and eyes. Their language, also called Walloon, is a French patois retaining numerous Gallic words.

Wall Paper, for ordinary purposes consists of a tough, but not a thick paper, printed with a pattern in size colors. For expensive wall papers a rather stout paper is used, and for very cheap kinds a paper of such poor quality that it can only be pasted on walls without tearing by great care. From the artist's room where the designs are evolved to the shipping department, where they are dispatched, finished in compact bundles, on their several journeys, the process of production is full of interest. The first stage is the designing in water-colors by the artist of the pattern which is to be reproduced. Then, as in chromolithography, the pattern is traced, and an estimate made of the number of colors that are to be used in the sketch. Say there are five, then five seasoned cedar rollers are prepared to receive the five portions of the sketch which contribute the five colors. The process by which these different portions of the sketch are placed upon the rollers is immensely curious. The designs stand from the surface of the rollers in high relief, and consist principally of thin hammered brass and felt. Where solid blocks of color are required that portion of the design is outlined with thin strips of brass which can be bent in any shape, these being pounded into the rollers with a tiny hammer and the spaces between the lines are filled in solid with strips of soft felt. When these surfaces are rolled with paint they print on the paper solid designs which perhaps represent the petals of a flower or the green of a leaf, etc. The first prints of color in the sketch are the body colors. Next in order come the shadings, the embellishments, dots of gilding, etc., each of these being defined on a separate roller. The work of outlining these designs is exceedingly difficult and laborious, the workman following the portions of the design which are traced on the rollers beforehand in order to be exact.

The work of outlining the designs on the rollers being completed, the first step is to print the background on the plain paper. The paper unwinds from large rolls weighing half a ton apiece, slowly passing under the moving machinery, up over rollers which carry it along to the brushes, which move rapidly back and forth across the paper as the latter passes along under them, and it emerges coated evenly with the required tint. This paint, by the way, is all mixed with water. Oil paint is not used at all; and the paint dries several shades lighter than it is in the liquid state.

To go back to the paper which has just received its background; it passes from the brushes up over a bar, traveling away from the machine and stretching out in a long sweep to where a double endless chain extending nearly 200 feet, the entire length of the building, traveling on a sort of miniature elevated railway, moves perpetually around and around the little railway. In these chains are notches which run parallel to each other, and they catch up in their progress, as they pass the nearest point to the tinting machine, wooden rods which are placed in a rack close to the chains. These rods catch the paper at regular lengths, bearing it up on to the little railway from which it hangs in long loops, and the procession of loops hanging from the rods resting upon the notches in the endless chains, marches slowly down the long building, drying en route from the heat that emanates from a series of steam pipes which are laid along the floor under the railway. The heat grows more and more intense as the procession progresses, and by the time the journey is ended at the other end of the building all vestige of dampness has departed from the paper. The latter is rolled again as fast as it accumulates and deposited in compact bundles on the floor ready for the printing of the design.

The accomplishment of the latter process is done by means of a machine which prints several colors at once. This machine is circular in form, and has places for the adjustment of the

cedar rollers which contain upon their rounded surfaces the different portions of the design to be printed, which represent the different portions of color in the design. Suppose for instance a single design of a spray of wild roses with green leaves on a delicate blue background is to be printed. The background is washed by means of the process described. To print the design say five rollers are used. The first bears the primary pink of the roses and any other touches of pink that may occur in the design. The next color is perhaps the shading of the pink, the darker portions of the petals, the next the green of the leaves, the next the yellow of the stamens of the flowers, and so on, the more intricate the pattern, the more colors it takes to print it, the more work to impress the pattern in its different portions upon the cedar rollers, and the more expensive it is to reproduce. Many of the patterns have finishing dots or lines of gold which lend brilliancy to the effect. These are all defined in the same way on a separate roller. (See illustration, page 1783).

After the paper has received the whole of the design, winding around the big wheel and passing under each cedar roller, receiving tints, shading and embellishment, it sweeps out over the bar as described before, being caught up in long loops by the sliding rods which move on the endless chains, and the long procession of loops moves in order slowly down the building. At the other end of the little railway the wooden rods drop off from the chain into a big box and as they accumulate they are taken out and removed to the starting point, where they again set out on their slow journey across the building.

An automatic arrangement on the printing machine puts a little red mark on the paper at regular intervals of so many yards, the length of an ordinary roll of wall paper, and at the other end of the building is stationed a boy whose duty it is to roll the paper in the small rolls in which it is sold. As fast as the paper arrives from the drying journey it is wound around a small rod and at each red dot a sort of knife cuts off the paper, the roll is adjusted again and the work of winding proceeds.

Wall Street. The Wall street community is composed of the Stock, Produce, Cotton, Coffee, and Consolidated Exchanges; the United States Sub-Treasury, Assay Office, and custom house; the New York clearing house, a multitude of National and State banks, trust companies, private banking firms, import and export houses, dealers in commercial paper and promoters, representatives of railroad and industrial corporations and of vast private estates, the "Curb" market, and hundreds of corporation lawyers and others who have close relations with the securities markets. It is there that railroads and industrial corporations are organized, financed and reorganized if necessary; that stock and bond securities of all kinds find their level of value; that money can always be borrowed on good collaterals; that money is transferred from one side of the world to the other through the medium of foreign exchange bills; that gold exports or imports are arranged; that money seeks investment in government bonds and all other American and some foreign securities. And it is in Wall street that fortunes are won and lost in stock speculation. Considered as a whole, Wall street is a true barometer of the country's financial condition, reflecting unerringly depression or prosperity. It is always forging a bit ahead of the times "discounting" known or expected factors, and sometimes upset by unexpected occurrences. True to American temperament, the stock market, considered alone, at times reflects an extravagant wave of optimism or an unjustifiable condition of pessimism, but as the money market is always a most reasonable place, normal conditions usually prevail.

The most interesting of all Wall street's interests is the stock market. The Stock Exchange is an unincorporated, voluntary association, resembling in organization a club, and having a membership of 1,100. Memberships or seats fluctuate in value. A man to become a member must buy a seat and then pass an examination before the committee of admissions. If he fails of acceptance he must sell the membership. If he is accepted, he, or his friends who lent the money used in

buying the seat, must sign a paper releasing the membership from all claims. Should he become insolvent the membership is sold and the proceeds are divided among his Stock Exchange creditors. About 500 Stock Exchange firms, exclusive of individual brokers operating alone, transact the business of that institution.

There are 500 telephones on the floor of the Exchange, each in charge of a boy who receives orders from his office and transmits them to the floor broker for execution. In every broker's office there are from 1 to 10 telephones, and many brokers rarely see their clients, who telephone orders from up-town offices, homes, or out of town. In recent years there has been an enormous growth of what are known as "wire houses." There are New York, Chicago or Boston firms which lease private wires connecting with many of the leading cities. The object is to get the latest financial news as quickly as possible, and at any necessary expense, to agencies and customers everywhere. The private wire system of Wall street spreads out through the country like a gigantic web or fan. A private wire to Chicago costs $12,000 a year. About 25 private wires are leased by the American Telephone and Telegraph Company between Wall street and Chicago, and 50 between Boston and Wall street, and 30 between Wall street and Philadelphia. The Western Union and Postal-Telegraph Companies also lease many wires, but the copper wires of the telephone company are mostly used, as they are not so susceptible to break-downs during storms, and they can be readily transformed into long-distance telephones. Should there be any important news, and conversation is preferable to a written message, the brokers in a very few minutes can talk from Wall street to Chicago or Boston, over their private wires, and every afternoon there is a vast amount of business transacted by word of mouth between Wall street and the cities it taps with leased wires. Many of the long wires also connect with the intervening cities. Thus Buffalo, Cleveland, Toledo and other cities may be "on" a Chicago wire, and each pays a share for the service.

This is the most expensive part of a broker's business, for "wire" houses employ from 1 to 15 telegraph operators, the most expert being employed and usually receiving $60 each per week. Speed and accuracy are the important considerations. An order to buy or sell on the New York Stock Exchange can be sent from Chicago and executed in four minutes. From Chicago quotations are sent at short intervals over the public wires to San Francisco, Seattle and other far Western cities. The Consolidated Stock Exchange also includes a number of important financial houses, and is unsurpassed in the efficiency of its service, and promptitude and accuracy of its quotations.

The several Wall street news bureaus handle news more quickly than any newspaper and there is no place in the world where newspaper speed and accuracy have reached such perfection. Each news bureau has a staff of reporters, a telegraph and cable service, and each distributes the news printed on small sheets of paper, one using yellow and the other white slips. Messengers run with the slips to the brokers' offices. Each messenger has a route to serve and each tries to outstrip the other. The result is that long before the afternoon papers appear, the brokers have read all the financial news and bulletins of the general news of the day from the "slips." The slips begin to be delivered at the broker's office at about nine o'clock. Opening with a review of the market, the London quotations and general financial and other news follow in quick succession, till at three o'clock in unending procession, slips have been received to the number of 100, 200 or more. In order to provide even greater speed each bureau maintains a page printing electric ticker service. For $30 a month you get the news slips and a news ticker which prints the bulletins of the leading events before they can be delivered on the slips.

Some news bureaus publish daily papers which have a considerable circulation among dealers in stocks, and there are about a half-dozen other financial papers including the "Journal of Commerce," "New York Commercial," "Daily Stockholder" and

"Wall Street News." Each daily paper in New York city supports a Wall street staff of from two to six men. Wall street depends for its printed statistics on the "Financial Chronicle," "Wall Street Journal" and "Poor's Manual," three American institutions that occupy places in the machinery of the broker's office.

Wall street wheels would stop going round if all its messenger boys should ever go on strike. The total number must be from 5,000 to 10,000. They are the brightest and quickest messenger boys on the face of the earth. "Hurry" is in the Wall street atmosphere and they make haste with their work which calls for nimble wits and rapidity of physical action. The duties of the Wall street boys are manifold; they compare stock transactions, make bank deposits, certify checks, transfer and deliver stocks, carry important orders, and they must be able to locate instantly 1,500 different offices in the Wall street district.

Walnut, a genus comprising seven or eight species of beautiful trees. The common walnut is a native of Persia and the Himalayas, but has long been cultivated in all parts of the S. of Europe. The date of its introduction is unknown, but it was certainly cultivated by the Romans in the reign of Tiberius. It is a lofty tree of 60 to 90 feet, with large spreading branches. The leaves have two to four pairs of leaflets, and a terminal one. They have a fine balsamic odor when bruised; this quality, however, being much more marked in some trees than in others. An infusion of them has been found useful in scrofula; when bruised and rubbed on the skin they are efficacious in curing itch; and placed in wardrobes they prevent the ravages of moths. The sap is limpid like water, but contains much sugar, so that the tree is sometimes tapped for it, like the sugar maple, and the sugar is procured by evaporation; a pleasant kind of wine is also made from it. An excellent pickle and a kind of ketchup are made from the unripe fruit. The ripe fruit is one of the best of nuts, and is an important article of export from many parts of the S. of Europe. Walnuts are also exported in large quantities from Kashmir and other Himalayan regions to supply the markets of India. In the S. of Europe walnuts are a very considerable article of food, and when perfectly fresh they are wholesome and nutritious, though in the state in which they are imported into Great Britain they are not easily digestible. Just before they are ripe they are much used in France with vinegar, salt, pepper, and shallots. Among the varieties of walnut in cultivation is one with a very thin shell, which is much esteemed.

Walnuts yield by expression a bland fixed oil, which is much used by painters as a drying oil, and in the countries in which it is produced is a common article of food. The cake left after the expression of the oil is sometimes used as an article of food,



WALNUT.
a, nut; *b*, seed.

and is also used for feeding cattle and poultry. The timber of the walnut is of great value, and is much used by cabinet makers. It is light, though hard and fine-grained; and gun stocks are made of it. The wood of young trees is white, and little esteemed; that of old trees is brown, veined and shaded with darker brown and black. The wood of the roots is beautifully veined. Both the root and the husks of the walnut yield a dye which is

used for staining light colored woods brown. The walnut, when meant to become a timber tree, is best sown where it is to remain, as the roots are much injured by transplanting. The best kinds of walnut for fruit are generally grafted. North America produces the finest walnut, and it is to be regretted that Americans do not more generally appreciate the value of this noble tree, so much superior to the common walnut of Europe, which seems to have had its origin in France and Italy, and to have passed from those countries into more northerly regions. The black walnut of North America is found in most parts of the United States. It is a very large and beautiful tree, the trunk sometimes 6 or 7 feet in diameter; its leaves have more numerous leaflets than those of the common walnut. The timber is even more valuable than that of the common walnut. The butternut is abundant in the N. and N. W. States of North America, and in Canada. It is a tree only about 50 feet high, with trunk about a foot in diameter; leaves with 15 to 17 leaflets; the fruit elongated, and externally covered with a viscid substance. The nut is hard and rough, with prominent ridges, and of good quality. The wood is not apt to split or warp, and is useful for many purposes. Sugar is obtained from the sap, as from that of the maple but is of inferior quality.

Walpole, Horace, Earl of Orford, an English author, 3d son of Sir Robert W. Walpole; born in London, Oct. 5, 1717; was educated at Eton, and King's College, Cambridge. In 1741 he entered the House of Commons and sat for various constituencies up to 1768. He always took a lively but superficial interest in politics, inclining sentimentally to extreme opinions. In 1747 he purchased "Strawberry Hill," near London, where he erected a Gothic villa, laid out the grounds with minute ingenuity, and made it a principal business of his life to adorn and furnish it with objects of curiosity and antiquarian interest. His maintenance was provided for by some sinecure appointments. In 1757 he established a private printing press at "Strawberry Hill," at which he printed not only his own works but those of others. In 1791 he succeeded his nephew in the peerage. He never took his seat in the House of Lords, and appears to have avoided using his title. The works of Horace Walpole are numerous; but his fame as a writer rests on his "Letters" and "Memoirs." The former are held to be unsurpassed in the English language, and both are highly interesting and valuable as a storehouse of the more evanescent traits of contemporary history. His romance, "The Castle of Otranto," is also well known. He died in London, March 2, 1797.

Walpole, Sir Robert, Earl of Orford, an English statesman; younger son of Robert W. Walpole; born in Houghton, England, Aug. 26, 1676; was educated at Eton, and at King's College, Cambridge; succeeded to the paternal estate in 1700, and entered Parliament. In 1712 he was expelled from Parliament for breach of trust and corruption, and sent to the Tower, but was returned to his seat the following year. He was Secretary of War and leader in the House of Commons in 1708, paymaster of the forces in 1714 and 1720, and first lord of the treasury and chancellor of the exchequer in 1715, and again in 1721, and prime minister from 1715–1717 and from 1721–1742. During his long administration the Hanoverian succession, to which he was zealously attached, became firmly established, a result to which his prudence and political sagacity largely contributed. He relieved the weight of taxation by many improvements in the tariff. In 1724 he was made a Knight of the Bath, in 1726 a Knight of the Garter, and in 1742 was created Earl of Orford. An able monograph on Walpole has been published by John Morley. He died in Houghton, England, March 18, 1745.

Walrus, in zoölogy, called also the morse, seahorse, and sea cow. The walrus is now confined to the regions within the Arctic Circle, though its extinct ancestors had a much wider geographical range. It is a large carnivorous marine mammal, ordinarily from 10 to 12 feet long, with a girth of nearly as much; it is said that it sometimes attains a length of 20 feet; muzzle abruptly truncated, with long and remarkably strong, bristly, moustaches; small eyes; external ear want-

ing, though the orifice is distinctly visible; body large and sack-like, tapering toward the tail; hind limbs short, connected by a membrane which covers the tail, fore limbs strong and stumpy, all with five digits. The hide is of a tawny brown color, with difficulty penetrated by bullets, and has been likened to a tough flexible coat of mail. The upper canines are developed in adults of both sexes into immense tusks, each from 15 inches to two feet long and weighing 10 pounds and upward. The most important function of these tusks is digging shell fish, the favorite food of the walrus, out of the banks and mud of shoal water. They also raise the body out of water, by digging into ice floes, and they form terrible weapons of offense, as by a quick turn of the neck the animal can strike upward, downward, or side-



WALRUS.

ways with equal dexterity. They are said to be monogamous, and the female brings forth at nine months one calf, usually on the ice floes. In disposition they are quiet and inoffensive, unless attacked or during the love season, or if their young are in danger; when they become desperately aggressive, and furiously attack the hunters on the ice or in boats. The numbers of the walrus, owing to reckless slaughter by the sealers and whalers, are fast decreasing, and the few remaining seek unfrequented spots in high latitudes inaccessible to sealers.

Walsh, Henry Collins, an American journalist; born in Florence, Italy, Nov. 23, 1863; was graduated at the University of Georgetown, D. C.; engaged in newspaper work; has been on the editorial staff of various leading newspapers and has also done important literary work; traveled in the Arctic regions, Central America, Morocco, and other countries. During the Spanish-American War he was war correspondent for the New York "Herald," and later was placed on the Sunday staff of that paper. His publications include "By the Potomac, and Other Poems" (1899); "The Last Cruise of the Miranda, a Record of Arctic Adventure," etc.

Walsh, Robert, an American author; born in Baltimore, Md., in 1784. In 1837 he removed to Paris, where he was consul in 1845–1851. He wrote for "Dennie's Portfolio," and edited the "American Review of History and Politics," the first American quarterly (22 vols. 1827–1837); most of the articles were from his pen. Others of his publications are: "Correspondence Respecting Russia Between R. G. Harper and Robert Walsh, Jr." (1813); "An Essay on the Future State of Europe" (1813); biographical prefaces to an edition of the English poets in 50 small volumes; "An Appeal from the Judgments of Great Britain Respecting the United States of America" (1819). He conducted the "American Register" (1817–1818), the "National Gazette" (1821–1837), and the "Museum of Foreign Literature and Science" (vol. i. 1822); and edited "Didactics: Social, Literary, and Political," a collection of aphorisms (2 vols. 1836). He died in Paris, Feb. 7, 1859.

Walsh, William Shepard, an American journalist; born in Paris, Feb. 1, 1854, son of Robert. He was connected with J. B. Lippincott & Co. from 1876 and in 1886 became editor of "Lippincott's Magazine." He wrote many essays, also juveniles, and historical and scientific books for the young; and published a critical commentary, "Faust: The Legend and the Poem" (1887); "Paradoxes of a Philistine" (1888); and "Handy Book of Literary Curiosities" (1892).

Walter, Thomas Ustick, an American architect; born in Philadelphia, Pa., Sept. 4, 1804. In 1833 he made the designs for the Girard College building, which on its completion in 1847 was pronounced the finest

specimen of classic architecture in the United States. His next great work was the breakwater at Laguayra for the Venezuelan government. In 1851 his design for the extension of the National Capitol at Washington, D. C., was adopted. Having been appointed government architect, he removed to Washington, and remained there till the completion of the work in 1865. While in Washington he also designed the extensions of the patent office, treasury, and postoffice buildings, the dome of the Capitol, and the Government Hospital for the Insane. He died in Philadelphia, Pa., Oct. 30, 1887.

Walters, William Thompson, an American merchant and art virtuoso; born in Pennsylvania, May 23, 1820; was educated as an engineer; became identified with the coal and iron industry; was art commissioner from the United States at the Paris Expositions (1867–1878), at Vienna (1873), and trustee of the Corcoran Gallery at Washington, D. C. His private art gallery was the most extensive and valuable (especially in Oriental ceramics) in the United States. He died in Baltimore, Md., Nov. 22, 1894.

Walthall, Edward Cary, an American lawyer; born in Richmond, Va., April 4, 1831; became a Brigadier-General C. S. A., in 1862, and Major-General in 1864; distinguished himself during the battle of Missionary Ridge, where he led his brigade over a ridge and held back the National troops till the Confederate army made its escape; and covered the retreat of General Hood's army after the defeat at Nashville. He was in law practice in Grenada, Miss., in 1871–1885, and a United States Senator from 1885 till his death, April 21, 1898.

Waltham, a city in Middlesex county, Mass.; bisected by the Charles river and on the Boston & Maine railroad; 10 miles W. of Boston; contains the Leland House for Aged Women, Home for the Feeble-Minded, public library; is best known for its manufactures of watches and clocks. Pop. (1930) 39,247.

Walton, George, an American patriot; born in Frederick co., Va., in 1740. In 1776 he was one of the signers of the Declaration of Independence, and was a delegate to the Continental Congress from that year till October, 1781; was elected governor of Georgia in 1779 and 1789; was chief-justice of the State in 1783, 1787, and 1793; and United States Senator in 1795–1796. He died in Augusta, Ga., Feb. 2, 1804.

Walton, Izaak, an English author, known as the father of angling; born in Stafford, England, Aug. 9, 1593. Walton's fame is mainly based on his "Compleat Angler; or the Contemplative Man's Companion," which was first published in 1653 and appeared in a considerably modified form in 1655. Few more popular books exist, and the editions are consequently numerous. He died in Winchester, England, Dec. 15, 1683.

Waltz, a dance said to have originated in Bohemia, now of almost universal adoption. Also, the music composed for such a dance.

Walworth, Ellen Hardin, an American author; born in Jacksonville, Ill.; was founder of one of the three National Societies of the Daughters of the American Revolution in 1890; director-general of the Woman's National War Relief Association in 1898; one of the first three women elected to the School Board under the New York law; and founder and later president of the Post Parliament in New York. She was a life member of the American Historical Association, a fellow of the American Geographical Society, and a member of the New York Genealogical and Biographical and New York Historical Societies. She died June 23, 1915.

Wampum, the American Indian name for beads made of shells, formerly used as money, or as a medium of commerce. They were also united to form a broad belt, which was worn as an ornament, and was called wampumpaque, or wampeaque. The manufacture of wampum is carried on among the Germans living in the hills of Bergen co., N. J. The interior of a wampum workshop resembles a lime-kiln. The floors are hidden from sight by great heaps of shells, and the rude benches and tools are covered entirely with white-flying dust as the shells

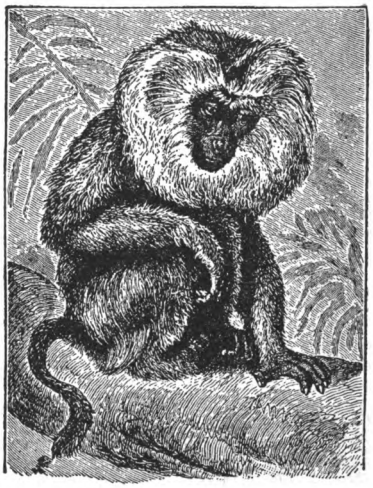
are being ground and drilled, and suggests the application of innumerable coats of whitewash, which in fact it really is.

The wampum makers purchase a cartload of conch and clam shells for 25 cents, delivered at their doors, and when a shell of sufficient thickness is selected it is broken with hammer and chisel into cubes of about two inches in length and one-third of an inch square. This piece of shell is then securely wedged into a vise made of two pieces of wood, connected with a hinge in the center. The jaws of the vise are opened and the shells inserted. Then the vise is closed tightly and held by pressure against the grindstone. In this manner, in a short time, the edges of the shell are rounded, and then the drill is brought into use.

The workman sits at a three-legged table, the top of which is fashioned from the half of a log, the under side still retaining the original bark covering, and, affixing one end of the drill to play freely in a button on his jacket, he next takes up a whalebone bow, similar to the kind used by jewelers, and, giving the cord a turn about the spool on the drill, he works the bow rapidly back and forth, from right to left, till the sharp end of the drill penetrates through the cube of shell from end to end lengthwise. When a sufficient number of cubes are completed they are then smoothed and polished with emery paper and strung on wires, precisely the same as children string beads, and they are then ready for the market. The wampum that is made from the streaked, bluish parts of hard-clam shells is the most beautiful, and therefore more valuable, and is harder and tougher to work. The price paid for the products of this almost obsolete industry is 14 cents a running inch on the string, and the average amount of money made by these shell artisans is about $6 a day during the season.

Wanamaker, John, an American merchant; born in Philadelphia, Pa., July 11, 1838; began his career as an errand boy in a bookstore; was afterward employed as a retail clothing salesman; and in 1861 established with Nathan Brown, the clothing house of Wanamaker & Brown, in Philadelphia. In 1869 he founded a large department store in that city; subsequently converted the A. T. Stewart building on Broadway, New York, into a similar store; and erected a large additional structure, connected with the latter. In 1889–1893 he was Postmaster-General. He was active in religious work, and founded the Bethany Presbyterian Sunday-School, in Philadelphia. Died, 1922.

Wanderoo, or Wanderu, in zoology, the Macacus silenus, from the S. of Hindustan, especially the country bordering the Malabar coast. It is about 2 feet in length, tail 10 to 12 inches. The wanderoos have long, slim bodies, covered with black hair,



THE WANDEROO.

tail of the same color, tufted. The head looks very large because of a mane, or ruff, and beard which sticks out round the face. This mass of long hair is either gray or white, and adds to the sly look of the broad face, soft dull eyes, and broad muzzle.

Wapiti, the name given by the North American Indians to an animal, a native of North America, ranging from the Carolinas to lat. 56–57° N. It is closely allied to but considerably larger than the stag, standing about

54 inches at the shoulder; yellowish brown on upper parts; sides gray, long coarse hair in front of neck, like a dewlap; antlers large, brow-tine duplicated. It frequents low grounds, or woody tracts near savannahs or marshes. The venison is of little value, as it is coarse and dry; but the hide



THE WAPITI.

makes excellent leather. It is called also, but erroneously, the elk and gray moose.

War, a contest between nations and States (international war), or between parties in the same State (civil war), carried on by force of arms, and resorted to either for purposes of advantage or of revenge. Formerly, war was waged at the will of despotic monarchs; now wars usually arise, in the first instance, from disputes concerning territorial possessions and frontiers, unjust dealings with the citizens of one State by another, questions of race and sentiment, jealousy of military prestige, or mere lust of conquest. Civil wars arise from the claims of rival competitors for the supreme power in a State, or for the establishment of some important point connected with civil or religious liberty. In all cases, the object of each contending party is to destroy the power of the other by defeating or dispersing his army or navy, by the occupation of some important part of his country, such as the capital, or the principal administrative and commercial centers, or the ruin of his commerce, thus cutting off his sources of recuperation in men, money, and material. An international or public war can only be authorized by the sovereign power of the nations, and previous to the commencement of hostilities it is now usual for the State taking the initiative to issue a declaration of war, which usually takes the form of an explanatory manifesto addressed to the neutral States. An aggressive or offensive war is one carried into the territory of a hitherto friendly power; and a defensive war is one carried on to resist such aggression. Certain laws, usages, or rights of war are recognized by international law. By such laws it is allowable to seize and destroy the persons or property of armed enemies, to stop up all their channels of traffic or supply, and to appropriate everything in an enemy's country necessary for the support or subsistence of the invading army. On the other hand, though an enemy may lawfully be starved into a surrender, wounding, except in battle, mutilation, and all cruel and wanton devastation, are contrary to the usages of war, as are also the bombarding of a defenseless town, firing on a hospital, the use of poison in any way, or torture to extort information from an enemy.

War, Prisoners of, in general persons captured from the enemy during military or naval operations. In former times the entire people of a vanquished city, state, or nation became the absolute property of the victors; the men were either put to death or with the women and children became slaves. By later usage the combatants or fighting force are the ones commonly considered and treated as prisoners of war. The young, the sick, the aged; Sisters of Charity, physicians, nurses, and others regularly engaged in attending the sick and wounded; clergymen, representatives of the Red Cross and other recognized humane organizations; musicians with an army; and a variety of other peo-

ple are considered noncombatants, and are exempted from the treatment accorded to captured combatants. The status of prisoners of war, as far as laws, rules, and customs go, is exceedingly complicated. Where it is desired to weaken an enemy by depriving it of its fighting material, a nation may hold its prisoners of war till after peace is declared. In such a case it will place them in more or less large bodies in locations where they can be kept under surveillance. During the time they are held they are entitled to food, medical attendance, and necessary clothing. As long as they do not disturb the quiet of the place or plot mutiny or resistance to their guard, they should be treated without violence or harshness.

A French decree of 1811 says: "Any prisoner of war, having the rank of an officer, and any hostage, who, after having given his parole, violates it, shall if recaptured, be regarded and treated like a soldier, as to pay and rations, and confined in a citadel, fort, or castle." The theory of modern usage is well stated by Montesquieu, viz.: "To slay an enemy after the battle, or to reduce him to slavery is no longer permitted by international law; to make him lay down his arms, and to hold him as prisoner of war till the reëstablishment of peace (unless a free retreat be granted him, either at once or at a stated time), are what the laws of modern warfare prescribe." A prisoner of war can no longer be forced to serve in the army of the nation which has taken him. It is often the best immediate policy for a nation to speedily relieve itself of its prisoners of war by exchange or freeing them on parole. A prisoner of more than usual importance in a military or political sense, however, may be held with advantage to the close of the war.

War, Prize of, property captured from an enemy, or an enemy's property captured from a neutral in time of war. If the property is captured in naval operations it is known as prize; if in military operations, it is booty. The entire subject of prize and prize money as considered by the United States government is defined in the statute of 1864. In the articles on Blockade, Contraband, and Neutrality will be found accounts of what articles constitute prizes and how they may be seized. The statute providing for their disposal is in brief as follows: It is the first duty of the commanding officer of a vessel which has made a capture to send the prize, in charge of a prize master and prize crew, into the nearest convenient port for adjudication. The prize master takes with him all documents found on the vessel. On reaching port the prize master reports to the district attorney of the district in which the port is located, and the attorney files in the United States District Court of the district a libel against the prize property, and a marshal is placed in charge of it. The court appoints a prize commission of three members, who treat the property as an individual under charges and proceed to try it, examining all papers and taking the depositions of the prize master, crew, owners, or representatives of the property, and other witnesses. The report or findings of the commission is submitted to the court, which condemns or releases the property according to the testimony. If the property is condemned the court orders its sale at public auction, and decides how the proceeds shall be distributed.

In case the captured vessel is not in a condition to be sent to a port for adjudication, an appraisement is made, the property is sold, and the proceeds are deposited with the nearest assistant treasurer of the United States pending disposal according to law. In military operations the booty really belongs to the sovereign or head of the nation whose army has taken it, and consists of personal property. It has been common for the nation to award a portion or even all of the booty to the army that captured it. Possession of the property for 24 hours usually confirms its title to the captor. Public monuments, works of art, libraries, and paraphernalia of religious worship are excluded from property now considered as booty. Movable property belonging to private persons not taking part in hostilities, is not accounted booty by the laws of war, and cannot be taken from the owners. The exception to this rule comprises merchant ships and their cargoes, which may become naval prizes of war.

War, Rules of, a code of instructions for the government of armies during hostilities. The instructions for the armies of the United States are contained in "General Orders No. 100" issued April 24, 1863, and reissued in May, 1898. These instructions, originally prepared for the United States armies alone and in the midst of the Civil War, were found to be so comprehensive that they were adopted by both France and Prussia in the war between them, and were the basis on which a general European conference afterward acted in drawing up an agreement on this subject. They cover almost ever conceivable feature of military conduct and usage in time of war, and define many technical terms. The instructions embrace 10 sections, viz.:

Section 1.— Martial law, military jurisdiction; military necessity, retaliation. Section 2.— Public and private property of the enemy, protection of persons, and especially of women; of religion, the arts and sciences, punishment of crimes against the inhabitants of hostile countries. Section 3.— Deserters, prisoners of war, hostages, booty on the battlefield. Section 4.— Partisans, armed enemies not belonging to the hostile army, scouts, armed prowlers, war rebels. Section 5.— Safe conduct, spies, war traitors, captured messengers, abuse of the flag of truce. Section 6.— Exchange of prisoners, flags of truce, flags of protection. Section 7.— The parole. Section 8.— Armistice, capitulation. Section 9.— Assassination. Section 10.— Insurrection, civil war, rebellion.

The following is a summary of the most important instructions: Military necessity admits of all direct destruction of life or limb of "armed" enemies and of other persons whose destruction is incidentally "unavoidable" in the armed contests of war. Military necessity does not admit of cruelty — that is, the infliction of suffering for the sake of suffering or for revenge, or of maiming or wounding, except in fight, nor of torture to extort confessions. It admits of deception, but disclaims acts of perfidy. It is lawful to starve the hostile belligerents, armed or unarmed, so that it leads to the speedier subjection of the enemy. When a commander of a besieged place expels the noncombatants, in order to lessen the number of those who consume his stock of provisions, it is lawful, though an extreme measure, to drive them back, so as to hasten the surrender. Commanders, whenever admissible, inform the enemy of their intention to bombard a place, but it is no infraction of the common law of war to omit thus to inform them. Surprise may be a necessity.

Retaliation will never be resorted to as a measure of mere revenge, but only as a means of protective retribution, and, moreover, cautiously and unavoidably — that is to say, retaliation shall only be resorted to after careful inquiry into the real occurrence and the character of the misdeeds that may demand retribution. The more vigorously war is pursued, the better it is for humanity. Sharp wars are brief. A victorious army appropriates all public money, seizes all public movable property till further directed by its government, and sequesters for its own benefit or that of its government, all the revenues of real property belonging to the hostile government or nation. The title to such real property remains in abeyance during military occupation, and till the conquest is made complete. The United States acknowledges and protects, in hostile countries occupied by them, religion and morality, strictly private property, the persons of inhabitants, especially those of women, and the sacredness of domestic relations.

Deserters from the American army, having entered the service of the enemy, suffer death if they fall into the hands of the United States. It is against the usage of modern war to resolve in hatred and revenge to give no quarter. Outposts, sentinels, or pickets are not to be fired on except to drive them in, or when a positive order, special or general, has been issued to that effect. Whoever intentionally inflicts additional wounds on an enemy already wholly disabled, or kills him, or orders that this shall be done, shall suffer death if convicted. Martial law is explained as simply military authority exercised in accordance with the laws and usages of war. A place, district, or country occupied by an enemy stands, in consequence of the occupation, under the martial law of the invading or occupying army.

It extends to property and to persons, whether they are subjects of the enemy or aliens to that government. Whenever feasible, martial law is carried out in cases of individual offenders by military courts, but sentence of death shall be executed only with the approval of the chief executive, provided the urgency of the case does not require a speedier execution, and then only with the approval of the chief.

War, World. See APPENDIX: *The United States in the World War; World War.*

Warbler, a popular name often applied to well-known singing birds of northern climes, whose notes are heard in wood, and hedge, and orchard, many of which commonly receive other popular names, as the blackcap, nightingale, hedgesparrow, redbreast, redstart, stonechat, wheatear, whitethroat, etc., while many receive the name warbler with some adjunct — reed warbler, etc. The more typical genera comprise birds of small size and plain plumage, usually alike in both sexes; most of them are migratory, going a long way S. of their breeding haunts to winter. Numerous species of warblers are found in North



REED WARBLER.

America, as suburban and country residents know, when the sunshine of May ushers in the summertime. They are birds of brighter plumage than the Old World warblers, but resemble them in their habits, and are also migrants.



REED WARBLER'S NEST.

Ward, Artemas, an American military officer; born in Shrewsbury, Mass., in 1727; was graduated at Harvard College in 1748. He served with distinction in the Revolutionary War, and was in command of the besieging forces at Boston till the arrival of General Washington, after which he was stationed with the right wing on Roxbury Heights. In consequence of impaired health he resigned his commission of Major-General, in April, 1776, but at the request of Washington continued to serve till the end of May. He was elected chief-justice of the Court of Common Pleas of Worcester county in 1776; was president of the Massachusetts Executive Council in 1777, and a member of the Legislature for 16 years; and served in Congress in 1791–1795. He died Oct. 28, 1800.

Ward, Artemus. See BROWNE.

Ward, Elizabeth Stuart Phelps, an American novelist and poet; born in Andover, Mass., Aug. 31, 1844. In 1888 she married Herbert D. Ward, with whom she sometimes collaborated. She was the author of many popular books. She died Jan. 28, 1911.

Ward, Henry Augustus, an American naturalist; born in Rochester, N. Y., March 9, 1834; was Professor of Natural Sciences in Rochester University in 1860–1865; and manager of gold mines in Montana and South Carolina in 1866–1869. In 1870 he began to travel in various countries, making large and valuable cabinets of mineralogy and geology, which he distributed among the universities and colleges of the United States. He founded, at Rochester, N. Y., an establishment where these cabinets were prepared, taxidermy executed, and natural-science collections arranged; was acting naturalist on the United States expedition to Santo Domingo; and wrote "Notices of the Megatherium Cuvieri," and "Description of the Most Celebrated Fossil Animals in the Royal Museums of Europe." He died July 4, 1906.

Ward, Mrs. Humphry (Mary Augusta Arnold), an English novelist; born in Hobart Town, Tasmania, June 11, 1851; eldest daughter of Thomas Arnold, second son of the great Dr. Arnold of Rugby. In 1872 she married Thomas Humphry Ward. In 1888 she published the widely read spiritual romance of "Robert Elsmere." Its success was phenomenal. Its successor, "David Grieve" (1892), showed all its faults but hardly all its merits, and yet is said to have brought its author in the first two months no less than $90,000. "Marcella" appeared in 1894; a short story, "Bessie Costrell," in 1895; "Sir George Tressady," a sequel to "Marcella," in 1896; and "Helbeck of Bennisdale," in 1898. Died, 1920.

Ward, John Quincy Adams, an American sculptor; born in Urbana, O., June 29, 1830. In 1861 he opened a studio in New York, where he modelled his "Indian Hunter," "The Good Samaritan," Commodore M. C. Perry, with reliefs, "The Freedman," and many busts and small works. In 1869 he built a studio in Forty-ninth Street, New York, where he made the "Citizen Soldier," and statues of Shakespeare, General Reynolds, General Washington, General Israel Putnam, an equestrian statue of General Thomas, General Daniel Morgan and Lafayette. He built a larger studio in 1882, where he made the colossal statue of Washington for the New York subtreasury building, a colossal statue of President Garfield, "The Pilgrim," etc. He designed the crowning group of "Victory" in the arch for the Dewey reception in New York in 1899. He had been vice-president and president of the National Academy of Design. He died May 1, 1910.

Ward, William G., an American educator; born in Sandusky, O., Nov. 5, 1848; was graduated at Ohio Wesleyan University in 1872, and studied theology at Drew Theological Seminary; afterward followed special studies at the Universities of Halle and Berlin; was president of Spokane College in 1890–1892, and Professor of English Literature at Syracuse University in 1893–1898. In the latter year he became Professor of English Literature at the Emerson College of Oratory, Boston, Mass.

Ward, William Hayes, an American editor, clergyman, and Assyriologist; born in Abington, Mass., June 25, 1835; was graduated at Amherst (1856); and at Andover Theological Seminary (1859). He was a pastor of the Congregational Church and professor at Ripon College in 1860–1868; editor of the "Independent" in 1870–1913. In 1884 he went to Babylon in charge of an exploring expedition. He wrote much on Oriental archæology for the "Bibliotheca Sacra," and other journals, and prepared the report of the expedition of 1884, and published "Biography of Sidney Lanier" (1885), "Notes on Oriental Antiquities." Died, 1916.

War Department, one of the executive departments of the United States government; is under the supervision of a Secretary of War, who has entire control of all matters relating to the equipment, discipline, etc., of the military forces of the country, and is charged with the duty of carrying into effect all laws relative to the army enacted by Congress. His authority in military matters is second only to that of the President of the United States. He is a Cabinet officer, and is usually accounted the third in point of dignity and im-

portance, the portfolios of State and the Treasury being the first two. During the stormy career of the republic this office has several times been one on which devolved the conduct of weighty affairs. The first Secretary of War was Henry Knox of Massachusetts, whose term of office began with that of President Washington. During the second war with Great Britain three secretaries of war followed each other in quick succession. They were John Armstrong, James Monroe, and William H. Crawford. The secretary at the time that war broke out was William Eustis. During the Mexican War William L. Marcy guided the department. During Buchanan's administration, the exciting period just preceding the Civil War, John B. Floyd was at the head of the department, and it was charged that his Southern sympathies induced him to store a large amount of war supplies in the South, which supplies when appropriated by the seceding States enabled them to levy war against the general government. He was succeeded by Joseph Holt, who, on the breaking out of hostilities, severed his connection with the department, and was succeeded by Simon Cameron, who in the same year (1861) gave place to Edwin M. Stanton, under whose guidance the department waged the long and bloody war of secession. Stanton during the reconstruction period was succeeded by Gen. U. S. Grant, and the following secretaries: Lorenzo Thomas, John M. Schofield, John A. Rawlins, William T. Sherman, W. W. Belknap, Alphonso Taft, James Don. Cameron, George W. McCrary, Alexander Ramsey, Robert T. Lincoln, William C. Endicott, Redfield Proctor, Stephen B. Elkins, Daniel S. Lamont, Russell A. Alger, Elihu Root, William Howard Taft, Luke E. Wright, Jacob M. Dickinson, Henry L. Stimson, Lindley M. Garrison, Newton D. Baker, John W. Weeks, Dwight M. Davis and James W. Good (1928).

Ward's Island, an island in the East river, opposite New York city; comprises about two hundred acres. It contains a large Insane Asylum for Males, a Home for Invalid Soldiers, a Home for Children, a Lunatic Asylum, and the State Emigrant Hospital.

Ware, Henry, Jr., an American clergyman and religious writer; born in Hingham, Mass., April 21, 1794. He took an active part in the organization of the Unitarian movement. He died in Framingham, Sept. 22, 1843.

Warfield, Benjamin Breckinridge, an American educator; born in Lexington, Ky., Nov. 5, 1851; was graduated at Princeton University in 1871; studied at the Princeton Theological Seminary and at the University of Leipsic; became Professor of New Testament Language and Literature in the Western Theological Seminary in 1878, and continued there till 1887, when he was called to the chair of didactic and polemical theology at Princeton Seminary.

Warfield, Ethelbert Dudley, an American educator; born in Lexington, Ky., March 16, 1861; graduated at Princeton University in 1882; Professor of History in Miami University in 1888–1891; president and Professor of History in Lafayette College in 1891–1914; then president of Wilson College, Chambersville, Pa.

War Indemnity, the sum of money paid by the defeated country in an international war to the victorious government. The largest amount ever demanded in this way was $1,000,000,000, which France was compelled to pay Germany after the war of 1870–1871. The war lasted 28 weeks; the number of German troops was estimated in round numbers at 1,000,000; of these they lost 128,000. Germany therefore received in cash $35 a week for each man's services, or $8,000 for each man lost.

In the war of 1866 Prussia took from Austria and her allies a war indemnity of $41,750,000, besides $3,750,000 requisition during the campaign. Prussia had 437,000 men in the field and lost 11,000; the war lasted one month; she received, therefore, $25 a week for each man's services, or $4,200 for each man lost. The war between Japan and China covered about nine months and the amount paid by the latter nation was $185,000,000. The Japanese had 80,000 troops which made the indemnity equivalent to $60 a week for each sol-

dier. But for the intervention of Russia the sum paid by China would have been much larger.

For the Turko-Russian war of 1877, Russia demanded $701,000,000, but her claim was reduced to $160,000,000, which amounted to $6.25 for each soldier. Great Britain has received two indemnities from China, the first, in 1840, being $25,000,000 and the second in 1860 about $10,000,000. The claim of Canada for indemnity for the Fenian raid from the United States in 1866 was settled by England, which country was anxious to maintain friendly relations with the United States government. In every instance where an indemnity has been exacted, save in the case of the Turko-Russian war of 1877, a portion of the vanquished power's territory has remained in military occupation by the victor, at the expense of the defeated nation, till the money has been paid. No indemnity beyond the cession of territory was exacted of Denmark by Austria and Prussia at the close of the war of 1864, and the same thing may be said of Austria at the time of her defeat by France and Italy in 1859. The Sultan of Turkey was forced by the powers to reduce his claims of $50,000,000 on Greece at the close of the war of 1897 to $10,000,000.

The settlement of war claims between the United States and Spain at the end of the war of 1898 was unique. The Spanish-American war lasted four months; it cost the United States $150,000,000, in money and 1,941 men. The Spaniards were defeated in every battle on sea and land, and finally sued for peace. A treaty prepared by a joint commission of American and Spanish representatives, was signed by President McKinley Feb. 10, and by the Queen Regent of Spain, March 17, 1899. By the terms of this treaty the United States relinquished all claims for indemnity of any kind, and agreed to send back to Spain, at its own cost, all Spanish soldiers taken prisoners, with their arms. All the stands of colors, uncaptured ships, small arms and guns of every kind, with their accessories, together with materials and supplies of all kinds belonging to the land and naval forces of Spain and the islands of the Philippines and Guam were to remain the property of Spain. The pieces of heavy ordnance, exclusive of field artillery, in the fortifications and coast defenses were to remain in their places for six months, the United States being permitted to purchase them from Spain during that time if satisfactory terms could be agreed on. The United States further agreed to pay to Spain the sum of $20,000,000. On her part, Spain was to relinquish all claim of sovereignty over Cuba; to cede to the United States the island of Porto Rico, and other islands then under Spanish sovereignty in the West Indies; the island of Guam, in the Ladrones; and the archipelago known as the Philippine Islands. In this case it would appear that the victors paid for their success and the conquered profited by their defeat, reversing the old proverb, "To the victors belong the spoils."

At close of World War, by Treaty of Peace signed at Versailles, 1919, Germany was assessed 226,000,000,000 gold marks. This was afterwards reduced to 50,000,000,000 gold marks.

Waring, George Edwin, an American sanitary engineer; born in Poundridge, N. Y., July 4, 1833. When the Civil War broke out he was commissioned major of the 39th New York Volunteers. He recruited six troops of cavalry, which, with the Benton Hussars, were organized into the 4th Missouri Cavalry, of which he was commissioned colonel. In 1877 he turned his attention to sanitary engineering. After the yellow-fever epidemic of 1878 in Memphis, Tenn., he planned and executed a sewerage system in that city which attracted the attention of sanitarians everywhere, and which has been adopted since in many large cities. In 1882 he was appointed a member of the National Board of Health, and remained on it several years. He was commissioner of street cleaning in New York city from Jan. 15, 1895, to Jan. 1, 1898; introduced the white canvas uniforms for street cleaners; and won wide commendation by his effective work. In October, 1898, he was sent to Havana by the United States government to arrange a plan for the sanitary improvement of that

city, and while there contracted yellow fever from which he died in New York, Oct. 29, 1898. A large sum of money was raised by subscription in New York and paid to his widow.

Warman, Cy, an American author; born in Greenup, Ill., June 22, 1855; received a common school education; settled in Colorado in 1880 and was employed in the Denver and Rio Grande railroad shops. In 1888 he engaged in journalism; became editor of the "Western Railway," and in 1892 of the "Creede Chronicle." He traveled in Europe and became known as "the poet of the Rockies." His publications include "Sweet Marie" (a popular song); "Tales of an Engineer" (1895); "The Express Messenger" (1897); "Frontier Stories" (1898); "The Story of the Railroad" (1898); etc. He died April 7, 1914.

Warmoth, Henry Clay, an American lawyer; born in McLeansboro, Ill., May 9, 1842; was admitted to the bar in 1861; entered the Union army in 1862 as lieutenant-colonel. He accompanied President Johnson on his "swing around the circle" through the Eastern and Northern States; became governor of Louisiana in 1868; and was military governor of that State till its new constitution was accepted by Congress, and was then inaugurated as civil governor and served till 1873. He was collector of customs at New Orleans in 1889–1893, and later became president of the New Orleans, Fort Jackson, and Grand Isle railroad.

Warner, Charles Dudley, an American editor and author; born in Plainfield, Mass., Sept. 12, 1829; was graduated at Hamilton College in 1851; admitted to the bar in 1856, and practised in Chicago till 1860, when he removed to Hartford, Conn.; became editor of the "Press" in 1861, and of the "Courant" on its consolidation with the "Press" in 1867. He was connected with "Harper's Monthly Magazine," in charge of an editorial department for many years from 1884. His first book was a compilation for the use of students in schools, called "A Book of Eloquence." He was the author of a large number of works, and editor of "A Library of the World's Best Literature" (1896–1898). He died in Hartford, Conn., Oct. 20, 1900.

Warner, Olin Levi, an American sculptor; born in Suffield, Conn., April 9, 1844; first studied in the Ecole des Beaux Arts in Paris and later was a student in Carpeaux's studio. In 1877–1878 he modeled "Twilight," a small statue, which established his reputation. His works include "The Dancing Nymph"; "Cupid and Psyche"; reliefs of Joseph and other Indian chiefs; busts of J. Alden Weir, Miss Maude Morgan; and statues of Governor Buckingham of Connecticut, William Lloyd Garrison, General Devens; etc. Died in New York city, Aug. 14, 1896.

War of 1812, the second serious conflict between Great Britain and the United States. It lasted for over two and a half years, beginning June 19, 1812. The principal cause of this war was the interference of Great Britain with American vessels, which she caused to be stopped on the high seas and searched for British subjects who were forced into the navy or imprisoned for refusing to serve. Several times American men-of-war were fired on and compelled to give up seamen in their crews. Great Britain also interfered with our commerce by her blockades and Embargo Act, and a bitter feeling was aroused. James Madison, at that time President of the United States, was personally opposed to a war, but was overruled by Congress, which appropriated large sums for the army and navy. It ended with the treaty of Ghent, which was signed Dec. 24, 1814, and ratified Feb. 18, 1815. The following is a chronology of this war:

1812.

Hull's expedition against Fort Malden.
Fort Mackinaw captured by the British and Indians.
Aug. 5— First Battle of Brownstown, Mich. British defeated the Americans under Van Horn.
Aug. 9— Second battle of Brownstown. Americans victorious.
Aug. 13— British sloop "Alert" taken by the United States ship "Essex" off Newfoundland.
Aug. 16— Hull surrendered the fort and city of Detroit.

Aug. 19—The "Guerriere," a British frigate, captured by the "Constitution" off Massachusetts.
Oct. 13—Battle of Queenston. Van Rensselaer wounded. Brock killed.
Oct. 13—Battle of Lewiston, N. Y.
Oct. 18—British ship "Frolic" captured by the United States ship "Wasp" off North Carolina.
Oct. 25—British ship "Macedonia" captured by the United States ship "United States" off Canary Islands.
Dec. 29—British frigate "Java" captured by the United States ship "Constitution" off Bahia, Brazil.

1813.

Jan. 22—Battle of Frenchtown, Mich. Americans under Winchester defeated by the British General Proctor.
Feb. 24—British brig "Peacock" captured by the United States ship "Hornet" off Demerara, South America.
March 4—Madison began second presidential term.
April 27—Battle of York (now Toronto).
May 1—Fort Meigs was besieged by 2,000 British and Indians under Proctor, who were routed by General Clay with a force of Kentuckians.
May 29—Prevost makes an unsuccessful attack on Sackett's Harbor.
June 1—The United States ship "Chesapeake," Captain Lawrence, captured by the British ship "Shannon," Captain Broke, in Massachusetts Bay.
Aug. 3—Fort Stephenson, Ohio, defended by Major Crogan.
Aug. 14—American brig "Argus" captured by the British ship "Pelican" in the English Channel.
Aug. 30—The Creek Indian War.—Massacre of Fort Mimms, Ala.
Sept. 5—British brig "Boxer" captured by the United States ship "Enterprise" off Maine.
Sept. 10—Commodore Perry's victory over the British commanded by Captain Barclay at the W. end of Lake Erie.
Oct. 5—Battle of the Thames. Tecumseh, the Shawnee chief, killed and the Indian confederacy broken.
Nov. 9—General Andrew Jackson defeated the Creeks at Talladega, Ala.
Nov. 11—Battle of Chrysler's Field, Can.—Americans victorious.

1814.

March 27—Battle of Horseshoe Bend, Ala.—Creek War ended.
March 28—American frigate "Essex" captured by the British ships "Phœbe" and "Cherub" off Chile.
April 29—British brig "Epervier" captured by the United States ship "Peacock" off Florida.
June 28—British sloop "Reindeer" captured by the United States ship "Wasp" near the British coast.
July 3—Americans under Generals Scott and Ripley captured Fort Erie, Canada.
July 5—Battle of Chippewa, Canada.—Scott defeated the British under Riall.
July 25—Battle of Lundy's Lane, Canada.
Aug. 15—First battle of Fort Erie.—British force of 5,000 men repulsed.
Aug. 24—British under Ross dispersed Americans at Bladensburg, Md.
Aug. 24—Washington, D. C., captured by the British under Ross. Public buildings burned.
Sept. 11—Battle of Lake Champlain. Captain Downie, British, surrendered his fleet to Commodore McDonough.
Sept. 11—Battle of Plattsburg, N. Y. Prevost, British, defeated by Americans under McComb.
Sept. 12—Ross, British, defeated Americans at North Point, Md. Death of Ross.
Sept. 13—Brooks bombarded Fort McHenry, Md., but withdrew without reducing the fort.
Sept. 15—Fort Boyer, Mobile Bay, bombarded by the British without success.
Sept. 17—Second battle of Fort Erie. Gen. Jacob Brown dispersed besiegers.
Nov. 7—Gen. Andrew Jackson drove the British from Pensacola, Fla.
Dec. 14—American flotilla surrendered to the British at Lake Borgne, La.
Dec. 23—Preliminary battle nine miles from New Orleans, La.—Gen. Andrew Jackson retired to intrenchments.
Dec. 24—Treaty of Ghent, Belgium, peace between Great Britain and the United States signed.

1815.

Jan. 8—Battle of New Orleans.—Fourteen days after treaty of peace.

(The British General Pakenham lost 2,000 men, and was killed.—The Americans lost seven men.)

Jan. 15—British squadron captured the United States frigate "President" off the coast of New Jersey.

Feb. 20—British ships "Cyane" and "Levant" captured by the United States ship "Constitution" off Madeira Islands.

March 23—British brig "Penguin" captured by the United States ship "Hornet" off Brazil.

War Prizes, Distribution of Value, the judicial apportionment of the proceeds of sale of condemned prizes of war. If a captured vessel of an enemy or a neutral contains munitions of war all such property is confiscated and passes to the government of the capturing vessel. Where the prize vessel is of superior or equal force to the captor vessel the net proceeds of the sale of vessel and cargo is awarded under the statute to the captors; and where the prize is of inferior force, one-half of the net proceeds goes to the government, and the other half to the captors. All vessels of the navy which aid a captor in securing a prize share with it in the proceeds. The distribution of prize money among the men taking part in the capture is substantially on the following basis: To the commanding officer of a fleet or squadron, one-twentieth part of all prize money awarded to any vessel or vessels under his immediate command. To the commanding officer of a division of a fleet or squadron on duty under the orders of the commander-in-chief of such fleet or squadron, one-fiftieth part of any prize money awarded to a vessel of such division for a capture made while under his command; but such part shall not be in addition to the share he would be entitled to as commander of the vessel making or aiding the capture. To the fleet captain, one-hundredth part of all money awarded to any vessel or vessels of the fleet or squadron in which he is serving; but if the capture is made by the vessel on which he is serving at the time, he will share in the award with all the officers and men on the vessel in proportion to his annual pay. To the commander of a single vessel, one-tenth part of all awards to his vessel, when the vessel at the time of the capture is under the orders of a superior officer, and three-twentieths when the vessel is independent of such other officer. After this apportionment, the residue of prize money is distributed among all others on duty on the capturing or assisting vessel or vessels at the time of the capture, in proportion to their rates of pay in the service. The law also provides a special bounty where an enemy's vessel is sunk or otherwise destroyed in an engagement, and the officers and crew thus lose the opportunity for acquiring prize money. This bounty is $100 for each person on board an enemy's ship or vessel of war at the beginning of an engagement resulting in its destruction, and is distributed among the officers and crew of the vessel or vessels taking part in the destruction in proportion to their regular pay.

Warrant, to give a guaranty to; to authorize; to give power or authority to, as to do or forbear anything, by which the person authorized is secured or held harmless from any loss, damage, or detriment by such act; as, these thoughts cannot warrant you from suspicion in others. In law, to assure; to secure to, as a grant to a guarantee. To secure, as the valid title of goods to a purchaser; or, to provide indemnification in the event of loss.

In criminal law, the authority issued by a justice of the peace for the apprehension of some one. The warrant should be under hand and seal of the justice; should set forth the time and place of making it, and the cause for which it is made; and should name the person against whom it is granted.

Warrant Officer, one of the highest ranks to which seamen under ordinary circumstances can attain. They are divided into three classes — gunners, boatswains, and carpenters, the gunners taking precedence of the other two. Formerly, before ironclads superseded the wooden ships, there was only one officer of this rank of each class carried on board even the largest ships. Now, in addition to the officer of each class appointed to carry

out the special duties of gunner, boatswain, and carpenter on board every ship, there are usually three or four junior gunners or boatswains appointed to battleships and some of the larger of other classes of ships to perform what are called quarter-deck duties, in addition to which in many of the larger ships an extra gunner or boatswain is appointed for torpedo duties. A certain proportion of these officers who have duly qualified in navigation are now appointed to command torpedo boats.

Warranty, in law, a promise or covenant by deed, made by the bargainer, for himself and his heirs, to warrant or secure the bargainee and his heirs against all men in the enjoyment of an estate or other thing granted. The use of warranties in conveyances has long been superseded by covenants for title, whereby, as the covenanter engages for his executors and administrators, his personal as well as his real assets are answerable for the performance of the covenant.

Warren, Gouverneur Kemble, an American military officer; born in Cold Spring, N. Y., Jan. 8, 1830; was graduated at the United States Military Academy in 1850. When the Civil War broke out he became lieutenant-colonel of the 5th New York Volunteers and colonel in August, 1861. He was promoted captain of United States Engineers, Sept. 9, 1861; promoted Brigadier-General of volunteers in September, 1862, for his gallantry at Gaines' Mill, and chief of topographical engineers in February, 1863. In March of the same year he was made chief of engineers in the Army of the Potomac. He was promoted Major-General of volunteers in May, 1863, and in March, 1864, when the Army of the Potomac was reorganized he was placed in command of the 5th corps. He was brevetted Major-General U. S. A. in March, 1865. He died Aug. 8, 1882.

Warren, Joseph, an American patriot; born in Roxbury, Mass., June 11, 1741. On June 14, 1775, he received a commission as Major-General; and when a majority of the council of war determined to fortify Bunker Hill, he insisted on having a share in the action that would take place. He was killed at the battle of Bunker Hill, June 17, 1775. His statue, by Henry Dexter, was unveiled on Bunker Hill, June 17, 1857.

Warsaw, a city. The Republic of Poland, formerly capital of Polish kingdom; situated on the Vistula, being connected with Praga, its fortified suburb, by a floating bridge. Warsaw consists of an old and new town, independent of its suburbs, and is a place of great antiquity. The chief edifices are the council house, a collegiate church, the barracks, Tamek or palace of the ancient kings, later the residence of the Russian viceroy and containing the Diet hall and the national archives; and the castle and an equestrian statue of Sobieski. The city is the center of industry, commerce, and literary activity of the kingdom, and the great entrepôt of commerce in Poland. In 1566 Warsaw succeeded Cracow as the capital of Poland. In 1793 Kosciusko retreated on Warsaw, and defended it with success against the Prussians, during the summer of 1794; but, on the arrival of Suvarof and the Russians, Praga was taken by assault, and delivered to pillage. Since 1815 Warsaw has been the residence of a viceroy representing the Emperor of Russia; it was also the place of meeting of the Polish parliament. In 1830 the Russians were driven from it by the Poles; but it was in the following year retaken. The university closed by the Emperor Nicholas after the insurrection of 1830, was subsequently reestablished through the influence of the Grand Duke Constantine. In the World War the Germans were defeated in a 10-days' battle in the vicinity on Oct. 24, 1914, and they occupied the city on Aug. 5, 1915. Population (1922) 931,176.

Warship, an armed vessel, built for the purpose of waging war on the water; a naval vessel. Warships have always been an important factor in the armament of those States which have a portion or the whole of their territory contiguous to the seas of the world. In no branch of warfare have the means of offense and defense been, in a few years, the subject of so much change, both in type and effectiveness as in naval construction

and armament. For many centuries after the invention of firearms the progress in the direction of invulnerable warships was very slow, and it was not till the naval operations of the American Civil War had given to the civilized nations of earth a great object lesson that the development of ships as fighting machines was accelerated. Prior to that time the strength of naval vessels was considered to lie entirely in the number of men and guns that a ship carried. The building by the Confederate government of the iron-clad ram "Virginia" directed attention to the value of armor-clad ships, and especially such ships when armed with a beak or ram, as a means of offense. The construction by Captain Ericsson of the "Monitor," and the successful fight of that vessel against the "Virginia," convinced naval architects that wooden warships were obsolete.

From this point the development of strength in warships is marvelous. Each civilized nation vied with the other in production of what was vainly imagined would prove invincible and invulnerable ships, but as fast as the defensive power of armor was increased the offensive power of the guns with which other ships were armed was augmented. This led to a great reaction in the methods of naval construction, and the efforts of engineers were directed to the production of warships of the swift cruiser type, rather than that of the battleship, and for a while the United States government constructed only swift armored and protected cruisers. After the United States had been forced into the World War, Congress made the most unstinted appropriations for the National defense, giving to the credit of the Navy Department, to carry out its program for the construction of 787 new ships of various types, the great sum of $1,150,400,000.

Warships, Classification of, the division of the vessels in a navy according to the rating and type. In considering the following details of warship classification, it should be borne in mind that they relate to conditions deemed fully adequate prior to the World War. In the United States navy the basis of rating is the displacement of a vessel, or, practically, its weight. All vessels having a displacement of 5,000 tons and upward are classed as first rates; those between 5,000 and 3,000 tons as second rates; those between 3,000 and 1,000 tons as third rates; and those below 1,000 tons as fourth rates. The classification by type is first and second-class battleships; armored, protected, partially protected and unarmored cruisers; barbette, single and double-turret monitors; auxiliary cruisers, consisting of large and swift mercantile steamships, partially protected and armed; gunboats; torpedo boats; tugs; patrol boats, adapted from ocean-going tugs and swift steam yachts; and a variety of special vessels such as the dynamite gun vessel "Vesuvius," the harbor defense ram "Katahdin," and the torpedo ram "Alarm." The special vessels provided for the war with Spain included large hospital and ambulance ships; a vessel equipped as a mammoth machine shop, with a large force of skilled workmen to make instant repairs to disabled fighting ships; and vessels fitted up to carry coal, food, ice, and water. The classification by rating differs from that by type. All the battleships are first rates; one double-turret monitor, the "Puritan," is a first rate; all other double-turret monitors are second rates; the cruisers are distributed among the four rates; and the gunboats are third and fourth rates.

In general, first rate ships are named after the States of the Union; second rate after cities in the United States; third rate after important events or names connected with the naval history of the United States; fourth rate after lakes and rivers in the United States; and special vessels for the distinctive service for which they are designed, as the hospital ship "Solace"; the naval repair ship "Vulcan," etc. The monitors as a class are named after rivers and American Indians. All the first-class battleships in service or under construction have a displacement of more than 10,000 tons; five are of 11,525 tons each, three of 10,288 tons, and one of 11,410. The ill-fated "Maine" was a second-class battle-

ship and had a displacement of 6,682 tons, and her only sister ship, the first "Texas" had a displacement of 6,315 tons.

War Song, a song having war or warlike deeds for its subject, or one that incites to war; more specifically, such a song sung by soldiers about to charge the foe, or by warriors at a war dance. The following is a list of the principal war songs of various nations:

American.—"Battle Cry of Freedom," the "Battle Hymn of the Republic," and "Marching Through Georgia," sung by the Union soldiers in the Civil War (1861–1865); "Dixie's Land" and "Maryland, My Maryland," sung by the Confederates.

Austrian.—Haydn's "Hymn to the Emperor."

Belgian.—The patriotic "Brabanconne."

Danish.—The "Song of Danebrog." The danebrog is the flag with a white cross which fell from heaven in the 13th century at the prayer of Waldemar II., and which ensured him the victory.

English.—"Rule Britannia." Words by Thomson, music by Handel.

French.—(Ancient), the "Chanson de Roland" ("Song of Roland").

French.—(Modern) the "Marseillaise" ("The Marseilles") and the "Chant du Depart" ("Parting Song").

German.—(Modern), Arndt's "Des Deutschen Vaterland" ("The German's Fatherland"), and "Heil Dir im Siegerkranz" ("Hail to Thee in the Conqueror's Wreath"), "Watch on the Rhine," "Sword-song of Korner," etc.

Hungarian.—The "Rakoczy March."

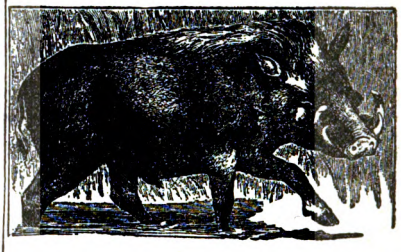
Italian.—Garibaldi's warlike hymn, composed by Mercantino, and Godfredo Mameli's "Italian brethren, Italy has awaked!"

Russian.—"God Protect the Czar!"

Scotch Jacobite Songs.—"The King shall enjoy his own again," and "When the king comes o'er the water." The "Lillibulero" of 1688 created a most marvelous furore.

Wart, a collection of lengthened papillæ of the skin closely adherent and ensheathed by a thick covering of hard dry cuticle. From friction and exposure to the air the surface presents a horny texture, and is rounded off into a small button-like shape. Such is the description of the simple wart, which is so commonly seen on the hands and fingers (and rarely on the face or elsewhere) of persons of all ages, but especially of children. Nothing is known of the cause of warts.

Wart Hog, closely resembling the true hogs in most of their characters, and particularly in their feet, but remarkably differing from them in their dentition: The number of teeth is much reduced; the canines become the large tusks, and in the adult the last molar only is found in each jaw, which grows to an enormous size as in the elephant. The head is very large, and the muzzle very broad; the cheeks are furnished with large wart-like excrescences, so that the appearance is altogether very remarkable and uncouth. The species are all natives of Africa. They feed very much on the roots of plants, which they dig up by means of their enormous tusks. The flesh of all the wart hogs and water hogs is in high esteem. They are hunted by dogs, which are often killed in the encounter with them.



WART HOG.

Warwick, Richard Neville, Earl of, "the king-maker," a great English nobleman, born 1428, killed 1471. He was the son of the Earl of Salisbury, and became Earl of Warwick by marrying the heiress of the title and estates. Taking the Yorkist side in the Wars of Roses, he was the main instrument in placing Edward IV. on the throne in 1461 in place of Henry VI., and became the most powerful nobleman in the kingdom. Quarreling with Edward on account of the latter's marriage, he went over to

Henry's side, and was able again to place him on the throne, but was slain at the battle of Barnet, and Edward recovered the crown.

Washburn, Charles Ames, an American editor, historian, and novelist; born in Livermore, Me., March 16, 1822. He was editor and proprietor of the "Alta California," and the San Francisco "Daily Times" (1858–1861); minister to Paraguay (1861–1865), residing in that country also from 1866 to 1868. He died in New York, Jan. 26, 1889.

Washburn, George, an American educator; born in Middleboro, Mass., March 1, 1833; was graduated at Amherst College in 1855, and at Andover Theological Seminary in 1859; became Professor of Philosophy in Robert College, Constantinople, in 1868; was acting president there in 1870–1877, and became president in the latter year. He was an authority on the political questions of Southeastern Europe. During the World's Parliament of Religions in Chicago, in 1893, he delivered an address on Mohammedanism. He contributed many articles to periodicals. Died, 1915.

Washburn, William Drew, an American manufacturer; born in Livermore, Me., Jan. 14, 1831; was graduated at Bowdoin College in 1854; studied law and began practice in Minnesota in 1857. He later acquired large interests in the lumber and flour industries; was a partner for many years in the Washburn and Crosby flouring mills, and afterward became a director in the Pillsbury-Washburn Company, which had a daily capacity of 22,000 barrels. He was the projector and for many years the president of the Minneapolis and St. Louis railroad; was the builder and from its completion till 1880 the president of the Minneapolis, St. Paul, and Sault Ste. Marie railroad; member of Congress in 1879–1885; and United States Senator from Minnesota in 1889–1895. He died July 29, 1912.

Washburn College, a coeducational institution in Topeka, Kan.; founded in 1865 under the auspices of the Congregational Church.

Washburne, Elihu Benjamin, an American statesman; born in Livermore, Me., Sept. 23, 1816. He early tried journalism, but abandoned it to study law at Harvard; was admitted to the bar in 1840 and began practice in Galena, Ill. He was elected to Congress in 1852 and held office till 1869, when he was appointed Secretary of State by President Grant, and soon after minister plenipotentiary to France. During the Franco-Prussian War he made the American legation the refuge of Germans and other foreigners who could not leave Paris. For this service he received special honors from the Emperor of Germany and Bismarck, as well as from the French leaders, Gambetta and Thiers. In 1887 he published "Recollections of a Minister to France." After he returned to the United States he resided in Chicago, where he died Oct. 22, 1887.

Washington, a State in the Western Division of the North American Union; bounded by British Columbia, Idaho, Oregon, Puget Sound, and the Pacific Ocean; admitted to the Union, Nov. 11, 1889; capital, Olympia; number of counties, 39; area, 69,127 square miles; pop. (1920) 1,356,621; (1930) 1,561,967.

The surface of the State is exceedingly rugged, being traversed from N. to S. by the great range of the Cascade Mountains about 100 miles from the coast. The highest peaks, all extinct volcanoes, are Mount Rainier, 14,444 feet; Mount Baker, 10,827 feet; Mount St. Helena, 9,750 feet; and Mount Adams, 9,000 feet. Puget Sound extends inland about 80 miles and contains many excellent harbors. The Pacific coast has numerous prominent headlands, including Capes Disappointment, and Flattery. The principal river is the Columbia.

Washington is called the Pennsylvania of the Pacific on account of its mineral wealth, especially in coal. Gold is found in the Yakima valley, and silver near Spokane.

In 1928 the value of the total mineral output was $22,120,000. There were produced 2,184,000 tons of coal, 1,569,000 pounds copper, 4,000 fine ounces gold, 45,000 fine ounces silver. Clay products, sand, gravel, lead, zinc, and arsenic, tungsten, platinum, were also produced. Granite, marble, limestone, and sandstone are found in the quarries of this state.

The value of all farm property in

1925 was estimated at $823,437,940. In 1929 there were produced: wheat, 44,910,000 bu., apples, 26,656,000 bu., hay, 1,914,000 tons, potatoes, 8,680,000 bu., and also many fruits and vegetables in large quantities. Livestock was reported: sheep, 657,000; cattle, 568,000; milch cows, 295,000; horses, 186,000; swine, 182,000; and 27,000 mules.

The manufacturing industry in 1927 was represented as follows: 3,344 manufacturing plants, employing 104,468 wage earners, paying $145,931,000 for wages and $389,885,000 for raw materials and yielding finished manufactured products having a combined value of $677,914,000.

In 1929 there were 105 National Banks with resources totaling $3,509,000,000, demand deposits of $156,711,000 and time deposits of $104,083,000.

The net revenue in 1927-28 was $16,271,606 and the assessed value of all property $5,619,042,169.

The governor is elected for four years; salary, $6,000 per annum. Legislative sessions are biennial and limited to 60 days. The Legislature in 1917 had 42 members in the Senate and 97 in the House. There were 5 Representatives in Congress.

Washington was a part of Oregon Territory till the admission of Oregon, in 1853, when this section was separately organized as Washington Territory. There was subsequently considerable trouble with the Indians. Immigration having set actively in that direction, it was admitted into the Union as a State, Nov. 11, 1889.

Washington, a city, and the capital of the United States of America; in the District of Columbia; at the confluence of the Potomac and the Anacostia, or East Branch, rivers, and on the Pennsylvania, the Baltimore and Ohio, the Southern, the Chesapeake and Ohio, and the Richmond, Fredericksburg, and Potomac railroads; 136 miles S. W. of Philadelphia; 226 S. W. of New York; 40 miles S. W. of Baltimore, and 185 miles W. of the Atlantic Ocean. The site of the city is an admirable one, surrounded by a circle of hills and comprising a rolling plain, with here and there irregular eminences which provide beautiful and advantageous positions for the various public buildings. The city was laid out expressly for the National Capital and on a scale indicating that it was expected to grow into a vast metropolis; area, 70 square miles; pop. (1920) 437,571; (1930) 486,869.

The Capitol.—The city contains many magnificent structures, of which the National Capitol, a building crowning Capitol Hill and costing $25,400,000, is one of the most beautiful public edifices in the world. It is built in pure Classic style; has an extreme length of 751 feet, 4 inches; and an extreme breadth of 350 feet; covers an area of over 3½ acres; and faces the east. The central building is of Virginia sandstone painted white, and its portico has 24 monoliths each 30 feet high, also of sandstone. From this part project two immense wings of Massachusetts marble, and their porticos are embellished with 100 monoliths of Maryland marble. President Washington laid the corner stone of the central building on Sept. 18, 1793; the wings or extensions, which were partially destroyed by the British in 1814, were erected in 1811; the central building was wholly completed in 1827; and the extensions were first occupied in 1857-59.

The main front is beautified with three splendid porticos adorned by Corinthian pillars. The central portico contains noted groups of statuary, and on the esplanade immediately in front stands Greenough's famous colossal statue of Washington. The entrance to the rotunda is by the celebrated bronze door, designed by Randolph Rogers and made by Von Müller in Munich. It is 17 feet high by 9 feet wide, and cost $28,000. The relief work on the door commemorates the discovery of America by Columbus. The walls of the interior of the rotunda, which is 180 feet high and 96 feet in diameter, are ornamented with panels containing paintings of scenes in American history; while in a space 9 feet wide encircling the hall at a height of 107 feet there is a series of relief illustrations, also of American history. Above the rotunda is built the famous dome, which is 96 feet in diameter and 220 feet from the floor at its highest point. The exterior of the dome is 135½ feet in diameter,

241 feet above the main buildings, and 307½ feet from the ground. A spiral flight of stairs between the inner and outer walls leads to the gallery of the dome, which affords an excellent view of the fresco paintings overhead. The cupola on the top of the dome is 17 feet in diameter and 52 feet high and is surmounted by a ball on which stands a bronze statue of "Liberty" 19½ feet high, by Crawford.

The next most impressive feature of the Capitol is the National Statuary Hall, formerly the Old Hall of the Representatives. In form it is semicircular, and contains 24 columns. The ceiling is 57 feet high at the apex and the length of the room is 96 feet. Here are statues of the two most eminent men from each State in the Union. The Hall of Representatives in the S. wing is said to be the finest legislative chamber in the world. It is 36 feet high and 139 feet long by 93 feet wide. It contains galleries with 1,500 seats for spectators, and desks for members (435 in 1917). The Senate chamber is 113 feet long by 81 feet wide. It also contains galleries accommodating 1,000 visitors, and desks for 96 Senators. Both of these chambers are tastefully decorated and are splendid specimens of architecture. The Capitol also contains the Vice-President's room, various committee chambers, etc. The grounds surrounding the Capitol comprise about 50 acres, and are divided into the East and West grounds. They form a beautiful specimen of landscape gardening and are adorned with statuary and fountains.

The Congressional Library.— The new Congressional Library is built just E. of the Capitol in a square comprising about 10 acres. It is three stories high, 470 feet long by 340 wide, is constructed of white New Hampshire granite in the Italian Renaissance style, and cost $6,347,000. The building contains an octagonal reading room, 100 feet in diameter. There are many magnificently carved marble arches. The library is constructed around four spacious inner courts and in all has over 2,000 windows, which make it the best lighted building of its kind in the world. Besides the reading room, there are a lecture hall, copyright record rooms, a large art gallery, a map room, etc. The whole library could be made to accommodate 6,000,000 volumes. On June 30, 1930, it contained 4,103,936 books and pamphlets, 1,161,478 maps, 1,062,194 pieces of music and 498,175 photographs, engravings and lithographs. Expenditure for 1930 was $1,858,238.

The Department Buildings.— The United States Treasury building is 1¼ mile W. of the Capitol. It is constructed of granite in the Ionic style, and cost $6,000,000. It is three stories high and 468 feet long by 264 wide. An Ionic colonnade modeled after the Temple of Minerva in Athens, is built on the E. front. On the W. front is a magnificent central entrance with eight colossal monolithic columns. There are in all about 200 rooms including the cash room, which is finished with rich marble and occupies two stories; the gold room, containing millions of dollars in gold coin; the Redemption Division; counterfeit room, etc. All of the United States notes, bonds, etc., are made here.

The building of the State, War, and Navy Departments is one of the largest public edifices in Washington. It is built of granite in the Roman Doric style, is four stories high, 567 feet long by 342 feet wide, covers 4½ acres, and cost $11,000,000. In the N. and E. wings are the War and Navy Departments; in the S. portion is the State Department. The building contains in all 566 rooms, including the Hall of the Secretary of State, the Ambassador's Room, and the library with 60,000 volumes. In the latter apartment the Declaration of Independence is preserved.

The building of the Patent Office, also known as the Department of the Interior, is located in the central part of the city. It is 453 feet long by 351 feet wide, and is constructed of granite, marble, and freestone, in the Doric style. The main entrance faces F street, and is reached by a broadway stairway of granite steps. The portico has 16 enormous Doric columns supporting a classic pediment. The building contains besides offices and other rooms the model room, in which there are a great number of models,

representing every department of mechanical art. The length of the floor in the latter room is 1,350 feet, or over ¼ of a mile. The offices of the Secretary of the Interior, of the Commissioner of Patents, and of the Indian Bureau are on the second floor.

The building of the Land Office, formerly occupied by the Postoffice Department, and costing $1,700,000, is of white marble in the Italian or modified Corinthian style, and is 300 feet long by 204 feet wide. It is three stories high and on the 8th street side has sculptures illustrating the telegraph and railroad.

The Pension building is constructed in the Renaissance style. It borders on Judiciary square, covers 80,000 square feet, is 75 feet high, and 400 feet long by 200 feet wide. On the exterior and on a level with the second floor is a notable band of sculpture in terra-cotta, 3 feet in height, and 1,200 feet in length. It represents an army in campaign, supported by sailors and boats of the navy.

Among more recent public structures are separate office buildings for the use of the members of Congress. That for the Senators is N. E. of the Capitol and covers the block bounded by First, B, Second, and C streets; that for Representatives is S. E. of the Capitol, and covers the block on B street, between New Jersey avenue and First street. The appropriation for each building was $2,500,000.

The Smithsonian Institution is a magnificent structure, erected of red sandstone in the Romanesque style. It is 477 feet long by 150 feet wide and has 9 towers from 75 to 150 feet in height. It was established by JAMES SMITHSON (*q. v.*). The remaining noteworthy buildings include the Bureau of Education, Department of Agriculture, Army Medical Museum and Library, building of the Commission of Fish and Fisheries, the United States Naval Observatory, Executive Mansion or "White House" (see WHITE HOUSE), a National Soldiers' Home, etc. The buildings of note not belonging to the government include the Corcoran Gallery of Art, the Masonic Temple, Odd Fellows' Hall, Washington Market, the court house, New Willard, Raleigh, Shoreham, Arlington, and Gordon hotels, and the Cosmos, Army and Navy, Washington, and Metropolitan clubs.

Monuments.— These include the Washington Monument, the Naval Monument, in honor of the officers, sailors, and marines who were killed in the Civil War, the Lafayette Monument, with statues of Lafayette, Rochambeau, d'Estaing, De Grasse, and Duportail, statues of Washington, Franklin, Webster, two of Lincoln, General Rawlins, Admiral Farragut, Martin Luther, Admiral Dupont, President Garfield, and Chief-Justice Marshall; and equestrian statues of Gen. Winfield Scott, Nathaniel Greene, George H. Thomas, W. S. Hancock, J. B. McPherson, Andrew Jackson and the Lincoln Memorial, 1921.

Municipal Affairs.— The city owns an extensive waterworks system, originally established in 1853–54; now supplied from the Potomac river after purification by sedimentation and coagulation; and valued at over $18,000,000. There are over 772 miles of water mains; 1270 miles of avenues and streets, of which over 570 miles are improved; and about 898 miles of sewers. The streets are lighted by gas and electricity at an annual cost of over $700,000. The average cost of the police department exceeds $3,000,000 per annum, and that of the fire department $2,000,000. The annual cost for the maintenance of the city government is over $40,000,000.

Banks.—Under the National Banking Act of 1913, the city is included in Federal Reserve District No. 5, of which Richmond is the central reserve city. On June 30, 1928, there were 13 National banks, with $275,025,470 in total resources. During the year ended the exchanges at the clearing house totalled $1,385,897,426. There were also 22 stock savings banks, with $1,500,000 capital and $37,343,432 in deposits, and 25 loan and trust companies.

Manufactures. — While Washington is primarily an administrative and social center, it is also credited with considerable industrial activity. According to the U. S. census on Manufactures in 1928, there were 538 plants, exclusive of those operated by the Government, employing 9,753 wage earners; paying $33,503,934 for raw materials, and $15,320,067 in wages;

and yielding products of a combined value of $83,576,826. The leading industries were printing and publishing, with products valued at $6,241,578; bakery products, $3,916,169; malt liquors $1,547,833; foundry and machine shop products, $1,230,244; and confectionery, $1,032,015.

Water transportation to all Atlantic seaboard ports is afforded by the Potomac River and there are various direct lines of steamers to Boston, Baltimore and Philadelphia.

Education.—Official reports for the school year 1913–14 included the following details: Children of school age, 65,867; enrolled in public day schools, 56,563; average daily attendance, 46,591; estimated enrollment in private schools, 5,000; public school teachers, 1,742; buildings used for public school purposes, 153; estimated value of all public school property, $10,600,000. There are separate schools for white and negro pupils. For higher education there were Georgetown University (R. C.), George Washington University (non-sect.), Gallaudet College (non-sect.), St. John's College (R. C.), Howard Universtiy (col'd), Catholic University of America, Trinity College (R. C., women), and the American University (M. E.).

Churches and Charities.—The U. S. census of 1910 reported as of 1906 a total of 289 religious organizations, having 136,759 members, 278 churches and halls, and church property valued at $10,637,863, and 297 Sunday schools, with 5,338 officers and teachers, and 56,771 scholars. The strongest denominations numerically were the Roman Catholic, Baptist bodies, Protestant Episcopal, and Methodist Episcopal. The charitable institutions include the Columbia Institution for the Deaf and Dumb, National Deaf-Mute College (the only college in the world for deaf-mutes), Government Asylum for the Insane, Providence Hospital, National Homœopathic Hospital, Garfield Hospital, Emergency Hospital, Columbia Hospital for Women, the Louise Home, Reform School for Boys, Reform School for Girls, Industrial Home School, Washington Orphan Asylum, House of the Good Shepherd, the Children's Hospital, St. Ann's, St. Vincent's, and St. Joseph's Orphan Asylums, etc.

Finances.—On July 1, 1878, the duties of the Sinking Fund Commissioners of the District of Columbia were transferred to the Treasurer of the United States. Since that date an annual appropriation has been made by Congress sufficient not only to pay the interest on the outstanding bonds, but also, it is believed sufficient to liquidate the whole debt of the District by 1924, in which year the 3.65 per cent. loan matured. In 1928 the assessed valuations: real estate $446,367,442; personal property, $5,896,729, total of $452,264,171; public debt approximately $7,000,000.

History.—In 1663, Francis Pope, an Englishman, purchased the original site of Washington, from the Indians, and named it Rome. The hill on which the Capitol now stands he called Capitoline Hill, and the Anacostia or East Branch river, the Tiber. It cost the Federal Congress a long and bitter wrangle to decide where the capital should be; and the decision was made at last by a political "bargain." Sectional jealousies were strong, and members of Congress from New England and from New York were afraid that those from the South might gain undue advantage over them. So stubborn grew the contest that it was feared the republic, as yet none too strongly welded together, would be shattered before a settlement could be made, and but for the political sagacity of Alexander Hamilton there might have been grave danger.

The Southern members, eagerly seconding Washington's fondly cherished desire, had asked that the seat of the Federal government be established on the banks of the Potomac; and when Congress refused this request their anger had rivaled the anger of the Northern men at the opposition of the South to Federal assumption of State debts incurred during the Revolution. Might it not be, Hamilton asked Jefferson, at a chance meeting in front of the President's house in Philadelphia, that the Southern men would agree to vote for the assumption of the State debts if the Northern men would support a bill for a capital on the Potomac, and would not the Secretary of State exert his good offices to bring

about such result? The suggestion came as if on the thought of the moment; but it was so earnestly and eloquently put forward by Hamilton that Jefferson declared that "though a stranger to the whole subject," he would be glad to lend what aid he could. With his powerful aid the assumption bill secured the sanction of Congress.

The site of the present city, covering the lower portion of the district, was selected by Washington in January, 1791, but it had been admired by him many years before. When a boy he saw it while riding over the country on horseback, and he spoke of it when as a young man he camped with Braddock on the hill where the naval observatory now stands.

Washington, always more of a merchant and engineer than artist, had thoughts of a great commercial city there, with the navigable Potomac reaching to the sea to help it in the race for supremacy; and it was with more than his usual zeal and hopefulness that in the early spring of 1791 he set about planning the future seat of government. The private owners of the land proved a source of vexation and of some delay. Many of these were the descendants of a little band of Scotch and Irish who had settled on the land 100 years before, and had inherited from their fathers ability to drive a hard bargain.

Aged David Burns, a justice of the peace and a tobacco planter in a small way, proved the most stubborn and greedy of all. Even Washington was at first unable to do anything with "obstinate Mr. Burns," who did not want a capital at his front door and did not care whether or not the seat of government came to the banks of the Potomac. Washington argued with him for several days, explaining to him the advantages he was resisting; to all of which, so the tradition runs, Burns made reply:

"I suppose you think people here are going to take every grist that comes from you as pure grain; but what would you have been if you had not married the widow Custis?"

Burns at last capitulated, and transferred his 600 acres which he did not wish to see spoiled for a good farm to make a poor capital, on the same terms that had been made with the other owners of the site—the government to have one lot and the original owner one lot alternately, the latter being also paid $125 per acre for such part of his land as might be taken for public use. Burns stipulated that the modest house in which he lived should not be interfered with in the laying out of the city; and since this condition was agreed to by Washington, Burns' cottage stood till a few years ago, one of the historical curiosities of the capital.

After David Burns, the most considerable owners of the land taken for the federal city were Samuel Davidson, Notley Young and David Carroll, the last named one of the three commissioners selected by Washington to have entire charge of the surveying and laying out of the district and the erection of the necessary public buildings. The other commissioners were Thomas Johnson of Maryland and David Stuart of Virginia; and on April 15, 1791, with impressive Masonic ceremony and in the presence of a goodly assemblage, they laid the first boundary stone of the district at Jones' Point, on the Virginia side of the Potomac. Early in the following September, the commissioners decided to call the federal district the Territory of Columbia — a little changed some years later to the District of Columbia; and the city to be established on the river bank the City of Washington—this without knowledge of the President, but with the common consent of Congress and the people.

Meanwhile Maj. Pierre Charles L'Enfant had been chosen by Washington to draw the plan of "the new Federal town." L'Enfant, a Frenchman, and a kinsman of D'Estaing, was a skilled military engineer who had come to America in April, 1777, in the train of Lafayette. He devoted the spring and summer of 1791 to elaborating his plans for the projected city. One point he quickly settled—he would not plan for 13 States and 3,000,000 of people, but for a republic of 50 States and 500,000,000 people; not for a single century, but for 1,000 years. Dominated by this thought, he builded better and wiser than any one in his lifetime was willing to admit;

for the chief men of his day, meagerly educated and reared in the practice of the strictest private economy, were provincial in their ideas of art and government expenditure.

Jefferson was almost the only man then conspicuous in public life who had had the advantages of extensive foreign travel; and even Jefferson wished the city laid out in the regularity of squares, with all the streets intersecting at right angles, as in Philadelphia, and unfortunately, in most other American cities. L'Enfant made the regular chess-board squares as Jefferson wished, but he put in so many avenues running at acute angles that the monotonous effect was happily destroyed, and the opportunity was presented for making the capital the magnificent city it has since become.

The States of Maryland and Virginia, prompted by the location of the federal capital within their borders, voted $192,000 to the United States to aid in the erection of the projected public buildings; and in March, 1792, soon after the completion of the survey of the city, the commissioners advertised for designs for the Capitol and for "the President's house," offering in each instance a premium of $500 and a building lot to the author of the accepted design. Among the submitted designs for the executive mansion was one by James Hoban, a young architect of Charleston, S. C. This design, which followed that of the palace of the Duke of Leinster in Dublin, being approved, Hoban was awarded the premium, and engaged at a salary of 100 guineas per year to superintend the construction of the mansion, which was soon called the White House.

For the Capitol 16 designs were submitted by as many architects; but all, after careful examination, were counted unworthy of serious consideration. Soon, however, Stephen L. Hallett, a French architect residing in New York, sent to the commissioners a sketch of a design which met with favor, and he was invited to perfect it. Hallett had not completed his labors when Dr. William Thornton, an Englishman, who had lately taken up his residence in America, submitted a design to Washington and Jefferson which so pleased them that the President requested its adoption, suggesting that as Thornton had no practical knowledge of architecture, the execution of his design be intrusted to Hallett. Thornton's design thereupon was accepted by the commissioners, and Hallett was appointed supervising architect with a salary of $400 per year. The corner stone of what was to be the N. wing of the Capitol was laid on September 18, 1792, when Washington delivered an oration and the Grand Master of the Maryland Free Masons an appropriate address. "After a ceremony," to quote a contemporary account of the affair, "the assemblage retired to an extensive booth, where they enjoyed a barbecue feast."

Ill-timed and unseemly bickerings between architect and commissioner, the opposition of L'Enfant to raising funds by a public sale of lots, and many such difficulties delayed the completion of the N. wing till 1800; but even these were not the only obstacles with which the builders of the federal city were compelled to contend. At the first sale of lots the hurtful rumor was industriously spread that Congress would never remove to the Potomac, but would remain in Philadelphia. In 1792 Washington wrote to the commissioners that unless greater activity prevailed, their whole previous labor might be lost; and later he was obliged to make residence on the spot compulsory with them. Most serious and embarrassing of all was the over present need of money. It had been hoped that before the sums subscribed by Virginia and Maryland were expended, the sales of lots would supply the balance needed to complete the public buildings. This expectation was only partly realized—many of the early contracts for the sale of lots were afterward repudiated,—and before the walls of the Capitol and the White House had reached the roof line, the commissioners were obliged in 1796 to ask Congress for an appropriation of money. Congress responded to this request by authorizing the commissioners to negotiate a loan of $300,000. This loan was guaranteed by the government, but the money was not to be had on the terms proposed. After some delay, the State of Maryland, at Washington's personal request, took

two-thirds of the loan, stipulating that the commissioners who were all men of means, should add their individual guarantee to that of Congress—a startling indication of the government's poor credit. In 1798 Congress, again appealed to by the commissioners, voted an appropriation of $100,000, and in the following year the State of Maryland lent them half that sum, requiring, as before, private security for its repayment.

As a result of all these efforts, work on the Capitol and the White House made fair progress, and two other public buildings were begun and pushed to completion. These were erected at the corners of the 20-acre plot set down on L'Enfant's design as "the President's grounds." One, known as the Treasury Department building, occupied a portion of the site of the present Treasury building. The War Office, as the other building was called, occupied the site of the central portion of the present State, War, and Navy building. This latter building, enlarged by the addition of a third story and a wing, was known in later years as the Navy Department building, being removed in 1871 to make room for the new building.

When Washington last beheld the city which bears his name, shortly before his death in 1799, it was a straggling settlement in the woods, almost wholly devoid of streets, with 30 or 40 residences,—most of these small and uncomfortable, — and an unfinished Capitol and President's house. Indeed, Washington long remained a sparsely built, unsightly city and a comfortless place of residence. For more than a generation its growth in population was less than 600 a year, a rate of increase that would now put to shame almost any village in the land; and so late as 1840 De Bacourt, the French minister, could write that Washington was "neither a city, nor a village, nor the country," but "a building-yard placed in a desolate spot, wherein living is unbearable."

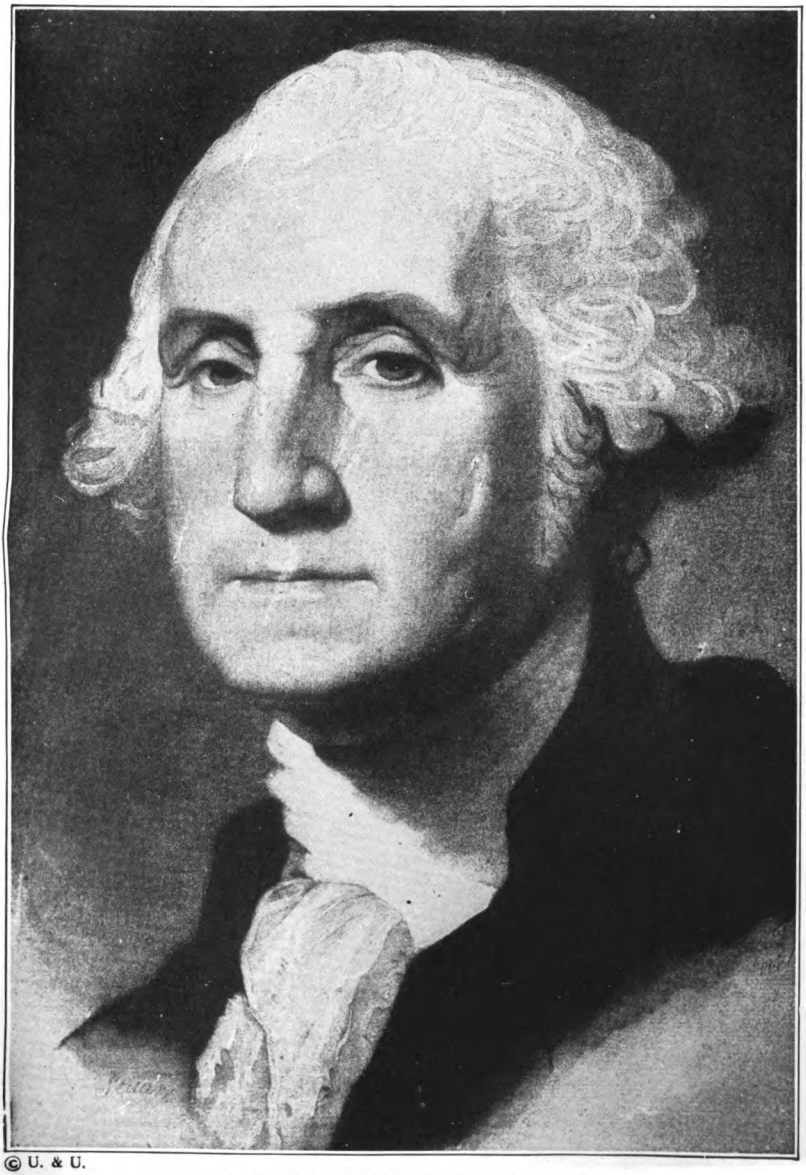
All this was changed by the struggle for the Union, which doubled the population of Washington and brought in freedom and Northern enterprise, but more important still, by a thousand moving and glorious associations, endeared the capital to the people of the whole country. Then came its remaking by Shepherd and his associates. Now it is a truly imperial city, and the judgment of Washington and the genius of L'Enfant are vindicated.

Washington was the first city in the United States to come under commission government (1878).

Government.—The city of Washington is co-extensive with the District of Columbia, and is governed by three commissioners (the first city in the country to have this form of local administration), two of whom are appointed from civil life by the President for a term of three years, and must have been residents of the District for at least three years. The other commissioner is detailed by the President from time to time from the Engineer Corps of the Army, and must be selected from among the captains or officers of higher grade who have served at least fifteen years in the Engineer Corps. The official title of the two commissioners first mentioned is Commissioner, that of the other, Engineer Commissioner.

The city was incorporated May 3, 1802. The English captured it Aug. 24, 1814, and burned the Capitol and other public buildings. In 1871 the municipal government of the city was abolished, Georgetown was consolidated with it and a territorial government established for the District of Columbia. But in 1874 Congress changed the government and placed it under control of three commissioners, abolishing the suffrage. In 1878 the government by commissioners was made permanent in the act of June 11, 1878. The city of Washington has had no government of its own. During the Civil War Washington was the scene of great military operations. It was fortified by a cordon of 68 massive earthworks or forts shortly after the beginning of the war. These works extended over a perimeter of 14 miles.

When the European War began to assume serious and suggestive proportions, the U. S. Government undertook various measures in anticipation of possible eventualities, and after the country was forced into the war all preparatory activities were quickened to feverish heat. The appointment of a large number of advisory and ex-



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GEORGE WASHINGTON (1732-1799)
First President of the United States



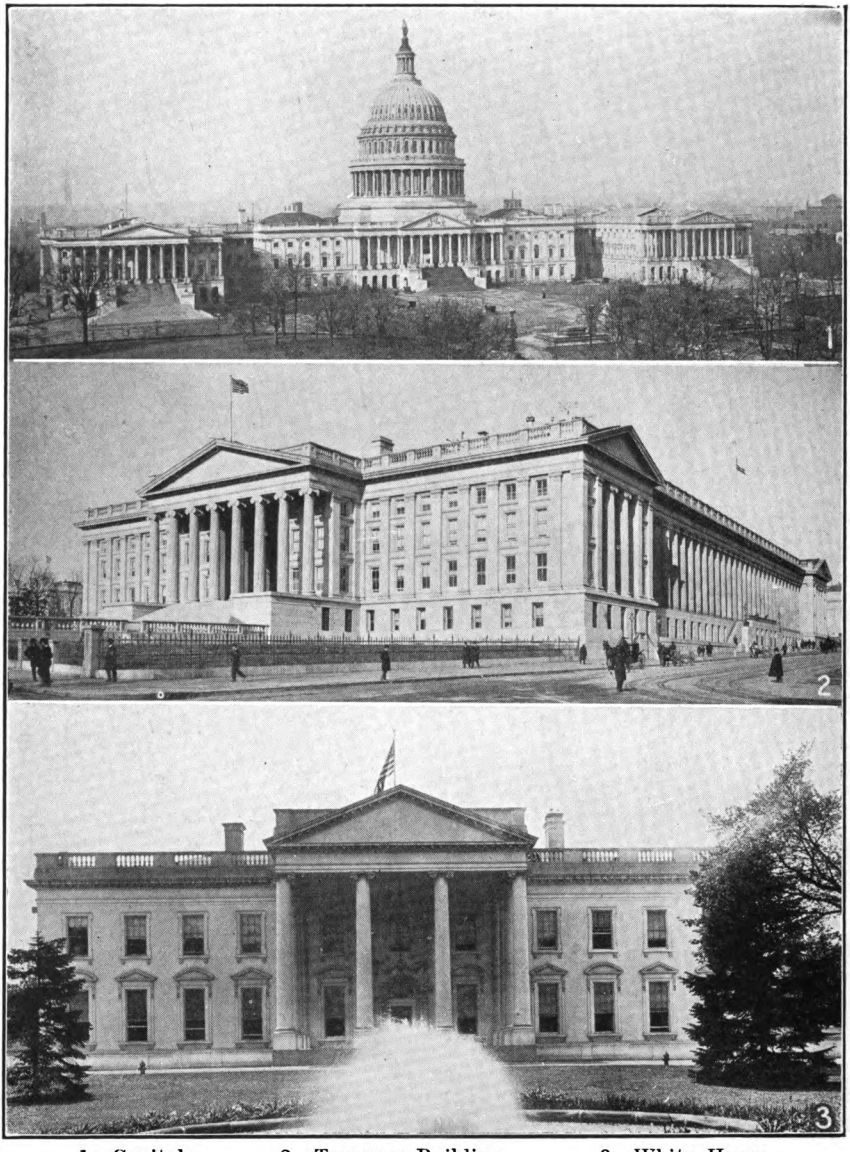
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PARIS FASH



ONS FROM 1500

WASHINGTON, D. C. — NOTED BUILDINGS



1—Capitol. 2—Treasury Building. 3—White House.

Photos by Brown Bros.

ecutive committees drew thousands of people to the capital as the headquarters of national activities, and by the close of 1917 it was estimated that there was an addition of over 65,000 people to the normal population, and the housing and feeding problems became acute. Hotels and boarding houses speedily became overcrowded; the Government was forced to hire many fine and commodious private residences for the use of the many commissions, committees, and clerks; restaurants and dining rooms were taxed far beyond capacity; and the entire city was converted into one of the largest and busiest industrial plants in the world. President Wilson's proclamation against alien enemies affected a large number of residents, who were obliged to move out of the District, which to them was made a barred zone.

Washington, Booker Taliaferro, an American educator; born a slave in Hale's Ford, Va., about 1859. After the Civil War he removed to West Virginia, where he worked in the mines, attending school in the winter. In 1875 he was graduated at the Hampton Institute, Va.; was a teacher there till in 1881, when he was elected by the State authorities of Alabama principal of the Tuskegee Normal and Industrial Institute, which he organized and built up. He was a fluent speaker and writer on educational and racial topics. He died Nov. 14, 1915.

Washington, Bushrod, an American jurist; born in Westmoreland co., Va., in 1762; was nephew of George Washington, and became heir to his papers and library; was a member of the Virginia House of Delegates, and of the Virginia ratifying convention in 1788; associate justice of the United States Supreme Court in 1798–1829. He died in Philadelphia, Pa., in 1829. His nephew, Augustine Washington, came into possession of the Washington residence, of Mount Vernon. He died in 1832.

Washington, George, the greatest of the world's great men, and first President of the United States; born of English stock in Westmoreland co., Va., Feb. 22, 1732. His father died early, but his mother, Mary Ball, gave him an admirable training, which was continued later by his elder half-brother, Augustine. Of actual schooling he had little, save such as sufficed to make him a practical surveyor. He spelt badly, but was able to do accounts well; he wrote poor verses, but was careful to copy out 50 odd "rules of behavior"; he had as little of the true literary afflatus as any youth of genius could well have, but he tamed the wildest horses and dominated the most unruly of his schoolmates. In short, he was a young Virginian Cyrus, riding well, shooting well, and telling the truth. But if it was fortunate for his country that he escaped becoming an epic poet, it was equally fortunate that he gave up the idea of entering the English service as a midshipman on account of a dutiful regard for his mother's wishes. One can contemplate with pleasure the picture he presents as a 16-year-old explorer, surveying the lands of Lord Fairfax amid the wild passes of the Alleghenies. The youth who so bravely fronted all "moving accidents by flood and field," who gained a reputation for sobriety and prudence both with the savage tribes he was forced to encounter and the official circles of Williamsburg, was doing precisely the work best fitted to prepare him for the higher labors of his manhood.

He rose rapidly, and in three years was made adjutant-general of militia in one of the border districts. But he was soon called away to accompany his invalid brother Lawrence on a voyage to the West Indies. This was destined to be his only experience of foreign travel; but he was by nature little capable of being tainted by provincialism. Returning to Virginia, he found his military charge renewed, and was given speedy opportunity for active service. He was dispatched by Governor Dinwiddie in the fall of 1753 on a mission to the French invaders of the Ohio region—a dangerous task, which others had declined, but which he accepted with alacrity. He braved the rigor of the season and the peril of the long and almost unknown way, and in about three months' time was back at Williamsburg with the French answer. Neither savages nor treacherous guides, nor ice-gorged rivers could prevail against so bold a heart or so keen an eye; nor could flattery at

home undermine a nature so well balanced, a modesty so innate and pure. He was at once put in command of the temporary militia of the colony, and was subsequently made lieutenant-colonel of the augmented forces. His superior officer soon died, however, and he was left in full charge of the expedition to the Ohio. He acquitted himself admirably in the fight at Great Meadows, but was forced to capitulate shortly after, the result being honorable, and on the whole fortunate, considering the rashness of the enterprise.

The death of the French officer Jumonville in a preliminary skirmish led to a curious sort of reputation for the young colonial soldier, the future liberator of America being denounced as an assassin because of an absurd mistake by which the leader of a scouting party was converted into the bearer of a flag of truce. But while French censure could not hurt Washington, Dinwiddie's conduct with regard to the reorganization of the Virginian troops did; and after a manly remonstrance he resigned, showing in this matter, as well as in his subsequent refusal to submit to be outranked by officers holding royal commissions, that perfectly poised dignity of character for which he is probably more noted than any other great man in history. When Braddock, however, offered Washington a post as aide-de-camp which he could accept with honor, he was glad enough to march against the foe and to tender advice which no man in America was better fitted to give and no commanding officer less likely to profit by. The prudence of Washington as a counselor, as well as his intrepid conduct at Fort Duquesne, taught all discerning observers that he had in him the stuff of which not only good border soldiers but also great generals are made; and one of these observers, the eloquent preacher Samuel Davies, was wise enough to predict that "that heroic youth, Colonel Washington," would one day render his country some distinguished service. For a time his services were chiefly directed toward securing the safety of the Virginia borders, and he found leisure to make a visit to Boston on military business, as well as to fall in love.

His marriage with the widow, Martha Custis, took place in January, 1759, and those who are wont to accuse Washington of lacking sentiment may be advised to study carefully all that can be learned about the romantic affair. Military life seemed over for him, and he settled down as a gentleman farmer, serving his colony in the House of Burgesses, where he was formally thanked for his exertions in the public behalf, but was too modest to be able to reply; looking after the interests of his parishes in the local vestries, dispensing hospitality in true Virginian style, and superintending his estates in a thrifty fashion peculiarly his own; and last, but not least, keeping up his spirits and his health by frequent indulgence in the manly sport of fox hunting. At the age of 30 he was plainly the greatest soldier in the colonies, the man to whom all eyes would turn should any public danger impend; and if no danger came, he would nevertheless be one of the wealthiest and most prominent citizens of the "Ancient Dominion." He had thus little to wish for except children. But if children did not come, his life was destined to be filled with a higher love and more absorbing cares. He was to be the Father of his Country. From his seat at Mount Vernon, which he had been progressive enough to link with the rest of the world by a private wharf, he watched the clouds gathering in the political heavens, and he showed a statesmanly prescience in being almost the first American to perceive that a complete break with England was necessary to the peace and prosperity of the colonies.

He was no revolutionist, but neither was he afraid to trust the conclusions of his own mind; and if he was no orator, he was at least not the man to mince his words. Cæsar himself did not more thoroughly see the necessity for one-man rule at Rome than Washington saw the necessity for public independence in America. He declared at Williamsburg, in 1774, that he was ready to raise 1,000 men, support them at his own expense, and march them to the relief of Boston. A few weeks later he rode on horseback with Patrick Henry and Edmund Pendleton to attend the 1st Continental Congress in Philadelphia. He was, by the confession of Henry himself, easily the greatest man among the delegates. The 2d

Congress saw him again in attendance, and ready to give his life for his country. But though he could brave death he could not face praise, and he left the chamber when John Adams nominated him to be Commander-in-Chief of the Continental forces. The next day he accepted the post, while protesting his own unworthiness and refusing to accept any pay beyond a reimbursement of his expenses. No Roman of old ever came forward to save the State with purer intentions or with more favorable auguries of success. Though to weaker spirits the prospect was appalling, strong men drew happy omens, not from the flight of birds and the entrails of victims, but from the justice of the common cause and the character of Washington. Nor did they mistake, nor do we now mistake, when we assign the success of the Revolution to these two causes.

As one retraces the weary years that elapsed between his taking command (July 3, 1775) and his laying down his office (Dec. 23, 1783), it is perceived clearly that under Providence the issue of the mighty struggle depended on him. Had he lost heart at the supineness and bickerings of the people at large, had he grown weary of correcting the blunders of incapable subordinates, had he disdained to control a fatuous Congress, or to put down a wretched cabal among his own officers, had his nerves given way at the sight of the sufferings at Valley Forge; had his spirit wavered at frequent defeat — in short, had he been anything but the noble patriot and great commander that he was, the course of history might have been changed, and the United States might have died in its birth and forever, or come into existence again years later and under far different auspices. But he was Washington — the noblest figure that any people has ever set in the forefront of its life and history. While he lived and fought on with his ragged troops, the Union was maintained in spite of all State squabbles; while he was in command, any alliance made with France must be one which America could accept with dignity; while his brave heart beat, repulse meant only fresh resolve, and hardship and suffering only more splendid rewards of triumph.

It is idle to deny that he was the soul of the Revolution, and it is equally idle to ask whether or not he was a great general. Whether he was, technically speaking, a master of the art of war, students of that art may decide; though it is as well to remind them that Frederick the Great praised his Trenton campaign as a masterpiece of strategy. But that he is worthy to rank with the supreme commanders of history, no man of sound judgment and capable imagination will deny. Not that he always won his battles, or won them in the most approved way; not that he flamed like a comet in the heavens, threatening desolation to the nations; not that he moved across the world's stage like a Karl or a Timor. His career does not enthrall us as does that of Alexander; it has not such tragic elements of inspiration and pathos as has that of Hannibal; it does not leave us breathless with admiration as does that of Cæsar; it does not exalt us and horrify us as does that of Napoleon. But it does give us that supreme sense of satisfaction which flows from the perception of harmony and proportion; it does thrill us with the intense and elevated joy which must ever follow the spectacle of great powers consciously working for the successful accomplishment of divine justice; it does fascinate us by means of those elements of sublimity and pathos that are never absent from the contemplation of a lonely but serene elevation above the common tide of humanity.

Nor are concrete evidences of his greatness as a soldier lacking. We remember the Berserker rashness and daring displayed at Fort Duquesne and at Monmouth, and we recall William the Conqueror at Hastings. We watch him at the crossing of the Delaware and at Valley Forge, and we recall Hannibal on the Alps. We observe him turning a ragged body of suspicious New Englanders into trained soldiers ready to die for him, and we recall no less a man than Cæsar. We see him put down the Conway cabal and reduce Congress to his bidding, and we recall Marlborough. We see him quell Lee with his fiery eye and biting words, and we somehow recall Cromwell. We watch him in his tent, brooding over the treason of Arnold and weighing the claims of mercy and justice in the case of Andre, and we

recall only his own imperial self. Yes, Washington the general is a supremely great man, and those who deny the fact do so because they have not been able to survey his career from the proper point of view. It is hardly an exaggeration to say that to the trained student his greatness is even implicit in his proclamations to his soldiers from first to last.

He was no master of style, but certainly for directness and vigor of phrase, for patriotic purpose, for clear-sighted content, his circular letter to the governors of all the States (June 8, 1783) is unsurpassed among the political documents of the world. His entire correspondence from the time he retired from command of the army till he reëntered the service of his country as its first President, is a monument to his modesty, to his magnanimity, to his prudence, and his wisdom. Frederick the Great himself, resting from war that he might restore order and peace to the people, is no grander figure than this victorious American general, watching from Mount Vernon the fortunes of his country, and lending the weight of his counsel and his example to the sacred cause of union. He served this cause still further by presiding over the convention in 1787, and 1789 he entered on the presidency of the nation, assuming a new role for which he was admirably fitted and in which he was destined to achieve magnificent success.

To many persons Washington the statesman is harder to realize than Washington the general. This is probably a result of political partisanship. Men look back to those two great founders of parties, Jefferson and Hamilton, and forget the chief who dominated and controlled them. Washington really made Hamilton and he always used Jefferson when he needed him; it was thus perhaps in accordance with weak human nature that Hamilton should have been ungrateful to his memory, while Jefferson was impelled to pay him a tribute — noble in spite of its jealous touches. No fact in history is more clearly established than that Washington was the chief figure in his own administrations. He came to the chair of State with the best equipment possible, and he would have left it vacant forever had it been requisite to fill it with a successor who should be his equal. He had not the analytic mind of Hamilton nor the philosophic grasp of Jefferson, but his training for the duties of a statesman had been superior to theirs. He came of a race used to act and to command. From an early age he had to rely on himself, and so he attained to that self discipline which is indispensable to a political leader. Circumstances determined that he should learn the lessons of life from men rather than from books; thus he stood in no danger of becoming a doctrinaire. His early experiences as a surveyor, a backwoodsman and a soldier gave him a true sympathy with democracy, and hence enabled him to understand the only rational principle on which a stable government could be founded in America; while his good birth and training, and his position as a planter aristocrat, put him in touch with that English past from which it would have been impossible for the new nation to break entirely. Add to all this the fact that his nature was essentially straightforward and manly, and that he had not a conspicuous weakness, that his mind was clear and flexible, and if not quick, certainly not slow, and we surely have as well equipped a statesman as the world's history can furnish.

Compared with him, how the other figures of the period, even the greatest shrink and diminish! The spiritual dignity of his altruism sits not on Franklin; his breadth and catholic charity of judgment belong neither to Hamilton nor to Jefferson: and who would think of comparing with him the Madisons, the Jays, the Morrises, the Ameses, the Wilsons of the time, able and patriotic men though they all were? Dignity, steadfastness, uprightness, serenity, benignity, wisdom — these are the characteristics of Washington's statesmanship, whether we regard his firm policy of resistance to the insolence of revolutionary France, or his refusal to plunge his country into a second war with England, or his cordial acceptance of the financial measures of Hamilton, or his steady accentuation of the national principle, or his noble efforts to reconcile his cabinet, or his strong but humane policy toward the Indians, or his prompt crushing of the Whisky Re-

bellion, or finally, his progressive views on the subjects of slavery and national education, and his prophetic comprehension of the importance of the West. A perfect equipoise of powers which taken separately would not be supreme, appears to be the characteristic mark of his rare variety of genius, which among men of action is illustrated in Alfred the Great, and among men of letters, in Sophocles. It is to this class that Washington belongs — to the class of men whose balance of faculties is so serenely perfect as to constitute genius of perhaps the highest order. What shall we say of such a man, save that he was as great in peace as he was in war; that he was veritably the Father of his Country?

Washington became Commander-in-Chief of the American army on June 15, 1775, and for several years his history was that of the Revolutionary War, elsewhere recorded. Suffice it here to say that he created the American army; fought the English generals, Howe, Clinton, Burgoyne, and Cornwallis, with various results; till, finally, he surrounded Cornwallis at Yorktown, and compelled him to capitulate. To his intrepidity, prudence, and moderation, the United States is almost wholly indebted for the independence which was secured to it by the treaty of peace concluded in 1783. Soon after this event, Washington resigned his commission to Congress, and in his address on that occasion, the magnanimity of the hero was blended with the wisdom of the philosopher. He returned to his seat at Mount Vernon and, like Cincinnatus of old, he returned to his former and favorite pursuits of agriculture. The federation of the States having failed to afford an efficient government, Washington proposed conventions for commercial purposes, which led to the Convention of 1787, of which he was a member, which founded the present Federal Constitution, considered by him as the only security against anarchy and civil war. Under this Constitution he was chosen President, and inaugurated in New York, April 30, 1789. His government was marked by that well-tempered prudence which distinguished all his conduct. Having been reëlected as President, he held office till 1797, when he again retired to his estate at Mount Vernon. In 1797, when there arose a difficulty with France, threatening hostilities, he was appointed Lieutenant-General and Commander-in-Chief, a post which he accepted with extreme reluctance, but with that spirit of obedience to the call of duty which had been the governing rule of his life. On Dec. 12, 1799, he was exposed in the saddle, for several hours, to cold and snow, and attacked with acute laryngitis, for which he was repeatedly and largely bled, but sank rapidly, and died, Dec. 14.

Washington was childless, but most happy in his domestic relations. He was mourned even by his enemies, and deserved the record: "First in peace, first in war, and first in the hearts of his countrymen." The following estimate of the character and intellect of the great American patriot is from President Jefferson:

"His mind was great and powerful, without being of the very first order; his penetration strong, though not so acute as that of a Newton, Bacon, or Locke; and, so far as he saw, no judgment was ever sounder. It was slow in operation, being little aided by invention or imagination, but sure in conclusion. Hence the common remark of his officers of the advantages he derived from councils of war, where, hearing all suggestions, he selected whatever was best; and certainly no general ever planned his battles more judiciously; but, if deranged during the course of action, if any member of his plan was disarranged by sudden circumstances, he was slow in readjustment. The consequence was, that he often failed in the field, but rarely against an enemy in station, as at Boston and York. He was incapable of fear, meeting personal danger with the calmest unconcern. Perhaps the strongest feature in his character was prudence, never acting till every circumstance, every consideration, was maturely weighed; refraining, if he saw a doubt; but, when once decided, going through with his purpose, whatever obstacles opposed. His integrity was the most pure, his justice the most inflexible, I have ever known; no motives of interest or consanguinity, of friendship or hatred, being able to bias his decision. He was, indeed, in every sense of the word, a wise, a good, and a great man. His temper was natural-

ly irritable and high-toned; but reflection and resolution had obtained a firm and habitual ascendency over it. . . . . His person was fine, his stature exactly what one could wish. Though in the circle of his friends, where he might be unreserved with safety, he took a free share in conversation, his colloquial talents were not above mediocrity, possessing neither copiousness of ideas nor fluency of words. In public, when called on for a sudden opinion, he was unready, short, and embarrassed. Yet he wrote readily, rather diffusely, in an easy and correct style. He read little, and that only on the subjects of agriculture and English history."

Washington, Treaty of, a treaty between Great Britain and the United States, signed May 8, 1871. Under its terms the "Alabama" claims, the San Juan boundaries, and certain fisheries disputes were settled by arbitration.

Washington Agricultural College, an educational, non-sectarian institution in Pullman, Wash.; founded in 1892.

Washington and Jefferson College, an educational institution in Washington, Pa.; founded in 1802, under the auspices of the Presbyterian Church.

Washington and Lee University, an educational non-sectarian institution in Lexington, Va.; was founded in 1749 by the Rev. William Graham as an academy at Timber Ridge meeting house, afterward developed into Washington University, and finally received its present name in honor of General Robert E. Lee, who after the Civil War became its president. He is buried in the college chapel, where a noble recumbent statue in marble marks his resting place.

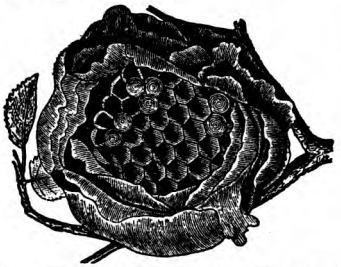
Washington Monument, a magnificent monument erected by the American people, in honor of George Washington. It stands in the Mall, a public park on the banks of the Potomac and Tiber creek, Washington, D. C. The corner stone was laid by President Polk, July 4, 1848, and Dec. 6, 1884, the cap stone was set in position. The foundations are 126½ feet square and 36 feet 8 inches deep. The base of the monument is 55 feet 1½ inches square, and the walls 15 feet ¼ inch thick. At the 500 foot mark, where the pyramidal top begins, the shaft is 34 feet 5½ inches square and the walls are 18 inches thick. The monument is made of blocks of marble two feet thick, and it is said there are over 18,000 of them. The height above the ground is 555 feet. The pyramidal top terminates in an aluminum tip, which is 9 inches high and weighs 100 ounces. The mean pressure of the monument is five tons per square foot, and the total weight, foundation and all, is nearly 81,000 tons. The door at the base, facing the capitol, is 8 feet wide and 16 feet high, and enters a room 25 feet square. An immense iron framework supports the machinery of the elevator, which is hoisted with steel wire ropes two inches thick. At one side begin the stairs, of which there are 50 flights, containing 18 steps each. Five hundred and twenty feet from the base there are eight windows, 18 x 24 inches, two on each face. The area at the base of the pyramidal top is 1,187¼ feet, space enough for a six-room house, each room to be 12 x 16 feet. The Washington monument is the highest monument in the world; total cost, $1,500,000.

Washington University, a co-educational, non-sectarian institution in St. Louis, Mo.; incorporated in 1853. It has been formed by the union of six schools started at different times: the undergraduate department, which includes the college; the St. Louis Law School; the O'Fallon Polytechnic School; the Henry Shaw School of Botany; the School of Fine Arts; the St. Louis Medical College; and the Missouri Dental College. To the university have been attached three secondary schools: The Smith Academy for Boys; the Mary Institute for Girls; and the manual training school.

Wasp, the name applied to a number of insects, belonging chiefly to the family vespidæ. They live in societies composed of females, males, and neuters, or workers. The females and neuters are armed with a sting. Their nests are usually of a material resembling brown paper, but some species build them of common clay.

Wasp, The, an American warship, built in Washington, D. C., in 1806, and commanded by Capt. Jacob Jones.

On Oct 18, 1812, she captured the British brig "Frolic," and was herself captured the same day by the British vessel "Poictiers." Also an American sloop-of-war, 22 guns and 160 men; built at Newburyport in 1814. On May 1, 1814, she left Portsmouth in command of Capt. Johnston Blakely. On June 28 she captured the British sloop "Reindeer," and on Sept. 1, fought and captured the British brig "Avon." On Oct. 9 following she spoke and boarded the Swedish brig "Adams" and took from it two American sailors on their way from Brazil to England. Since that day she has never been heard from.



NEST OF COMMON WASP SEEN FROM BELOW.

Wasson, David Atwood, an American clergyman, poet, and essayist; born in Brooksville, Me., May 14, 1823; was graduated at the Bangor Theological Seminary; accepted a pastorate in Groveland, Mass., but was soon dismissed for the liberality of his views. He then devoted himself to literature, writing chiefly for periodicals. He was called to Boston in 1865, but preached less than a year, owing to ill-health. He died in West Medford, Mass., Jan. 21, 1887.

Waste Lands, according to the general use of the term, uncultivated and unprofitable tracts in populous and cultivated countries. The term waste lands is not employed with reference to land not reduced to cultivation in countries only partially settled.

Watch, the act or state of watching; a keeping awake for the purpose of attending, guarding, preserving, or the like; attendance without sleep; vigilance, vigil. A person or number of persons set for a guard over the persons, property, or interests of others; a watchman or body of watchmen; a sentry, a sentinel, a guard. Also, the period of time during which one person, or a body of persons, watch or stand sentinel, or the time from one relief of sentinels to another; hence, applied to a division of the night when the precautionary setting of a watch is more generally necessary.

Also any contrivance by which the progress of time is perceived and measured; as, a timekeeper actuated by a spring, and capable of being carried on the person. The essential difference between a clock and a watch has been defined to be that the latter will run in any position, but the former in a vertical position only. Since the invention of the cheap spring clock this definition must be abandoned. Another characteristic which was formerly distinguishing was that the watch escapement was always controlled by a balance wheel and spring, while the clock escapement was generally governed by a pendulum. Watches are said to have been invented at Nuremberg, about the end of the 15th or beginning of the 16th century. America now makes the best watches.

As a nautical term, the period of time occupied by each part of a ship's crew alternately while on duty. This period is one of four hours, the reckoning beginning at noon or midnight. But in order to prevent the constant falling of the same watch to the same portion of the crew, the time between 4 P. M. and 8 P. M. is divided into two short watches of two hours each, technically known as dog watches.

Water, a clear, colorless, transparent liquid, destitute of taste and smell, and possessing a neutral reaction. It is one of the most important and most widely-distributed substances in nature, occurring universally in one or other of its three physical states = liquid, solid, or gaseous. As a liquid it constitutes the great mass of the oceans, rivers, and lakes, which cover nearly three-fourths of the earth's surface; in the solid state it exists permanently in the form of ice or snow in the polar regions; and as a vapor is a constituent of the ærial envelope of the earth, and the exhalations of volcanoes and boiling springs.

Water Beetles, beetles which live on or in the water. The Dytiscus, common in stagnant water, is olive-green above, and oval in shape. The respiratory organs of the perfect insect are not adapted to obtaining air from the water; it comes occasionally to the surface of the water for air, where it lies on its back, the openings



GREAT WATER BEETLE.
a, full-grown insect; *b*, larva.

of its air tubes in the last segment of the abdomen, being exposed.

Waterbury, a city in New Haven county, Conn.; at junction of the Naugatuck, Great Brook, and Mad rivers and on the New York, New Haven & Hartford railroad; 22 miles N. W. of New Haven; has been noted for more than a century for its varied metal-working industries, and latterly for its production of watches, clocks, brass, copper, and plated goods, lamps, and pins, hooks and eyes; contains a State armory, Masonic Temple, and a public library. Pop. (1930) 99,902.

Water-Color Painting, the most delicate of the graphic arts. It has had a large share in the modern prosperity of the fine arts, and of late has been practised by eminent artists in various countries, as the United States, Great Britain, France, Germany, and Austria. In the illumination of missals water colors were used mixed with the body white. Durer and certain of the German, Flemish, and Dutch artists were accustomed to outline drawings with a reed pen, and fill in those outlines with an auxiliary flat wash. Gradually the hard lines were replaced by touches with the brush, and the result was a monochrome in browns and grays, bistre or India ink. These again came to be tinted, and so suggested the full use of colors. Rembrandt often drew in brown, and added dashes of strong color; and Rubens produced something very like modern water-color drawings.

The modern art became emancipated from the old traditions by "gradual disuse of the general shadow tint, and imitation of the local color, not alone of the objects themselves, but of every modification resulting from light, dark, half-tint, or distance, a method which at once led to far greater truth and richness than could ever have been attained by merely passing color over the universal shadow tint." The stained drawing gradually gave way to the more perfect tinted drawing. But the tinted style predominated till 1790; and it may be said that the water colors of the 18th century were tinted monochromes. It was in the 19th century that Girton and Turner showed what scope and power there were in the art.

Water Colors, pigments prepared for the use of artists and others by mixing coloring substances in the state of fine powder with a soluble gum such as gum arabic. These are made up in the form of small cakes, which are rubbed down with water and applied with a brush to paper, ivory, and other materials. Moist water colors are made up with honey or glycerine as well as gum, and are prepared so as to be kept in small earthenware pans or metallic tubes. Dry cakes require to be rubbed down with water on a glazed earthenware palette or slab, but moist colors can be mixed with water for use by the friction of a brush, so that the japanned lid of the box which contains them serves for a palette. The latter are accordingly very convenient for sketching from nature.

Water Dog, a variety of the dog having a curly coat, long ears, a rounded head, and webbed toes. It seems to be allied to the poodle, but differs from the latter in its firmer set

and stouter body, and in its larger size. The water dog is highly intelligent, but less so than the retriever. It is usually of a greyish white varied with black and brown.

Water Dropwort, a genus of plants of the natural order Umbelliferæ. A number of species are natives of Great Britain, large perennial plants, with a strong and generally disagreeable aromatic smell, and compound or decomposed leaves. The common water dropwort and the hemlock water dropwort, or water hemlock, are both common in wet



HEMLOCK WATER DROPWORT.

places in Great Britain and throughout Europe, and both are narcotic acid poisons. The roots of the latter have some resemblance to parsnips, and hence fatal accidents have frequently occurred. The fine-leaved water dropwort, called water fennel by the Germans, is also common in ditches and ponds both in Great Britain and on the Continent. It is not so poisonous as the other species just named. It was at one time erroneously regarded as a specific against pulmonary consumption; but it has been advantageously employed in pulmonary complaints.

Water Flea, a popular name for minute aquatic Crustaceans such as daphnia, cypris, and cyclops. The common Daphnia pulex, abundant in fresh water, is a good representative. The body is enclosed in a bivalve shell; there is a large single eye; a parir of large antennæ are used as swimming organs. The daphnids are marvellously prolific, and for prolonged periods parthenogenetic. There is an interesting difference between the winter eggs which require fertilization and the summer eggs which do not. The females have a dorsal brood chamber between the shell and the back. In cypris also the shell is bi-



WATER FLEAS.
1, Cyclops communis; 2, Cypris unifasciata; 3, Daphnia pulex.

valve; there are five pairs of appendages on the head and two on the body; most of these are used in swimming or creeping. Among cyprids parthenogenesis again occurs, and in some species males have never been observed, while parthenogenetic development has been traced for as many as 40 successive generations. The females bear large egg sacs. In cyclops the body is more distinctly segmented and the shell is not bivalve; the head bears antennæ, mandibles, and maxillæ, and the first five segments of the thorax bear swimming appendages. Water fleas fed on microscopic plants and

animals and on organic debris, while they themselves — often occurring in countless swarms — form an important part of the food supply of certain fishes.

Water Gas, gas obtained by the decomposition of water. Water in the form of steam is passed over red-hot coke, resolving it into hydrogen and carbonic oxide, the oxygen being absorbed. The hydrogen and carbonic oxide are then passed through a retort, in which carbonaceous matter, such as resin, is undergoing decomposition, absorbing therefrom sufficient carbon to render it luminous when burned.

Water Glass, or **Soluble Glass,** a substance which, when solid, resembles glass but is slowly soluble in boiling water, though it remains unaffected by ordinary atmospheric changes. It consists of the soluble silicates of potash or soda, or a mixture of both. Among the purposes to which water glass is applied are painting on glass, coating stone, wood, and other materials to render them waterproof, glazing scenery and paintings, fixing wall paintings, etc. It is also extensively used by housewives and others for the preservation of eggs, by packing them in vessels containing the solution, and setting the vessels away till the contents are wanted.

Water Hen, an aquatic bird of the rail or gallinule varieties. They frequent ponds covered with aquatic herbage, overgrown water-courses, and the banks of slow rivers, swimming and diving with facility, assisted by an expansion of the membrane along the sides of the toes.

Water Lily, an exogenous aquatic plant including eight genera, and all possessing submerged root stocks. They are found in all temperate climates, and attain great size in the tropics. The white water lily is the familiar flower of ponds and placid streams throughout North America, its large and chaste flowers claiming precedence for beauty among the indigenous flora. The lotus has similar flowers, but tinted with pink, and has strongly toothed floating leaves; it is the white lotus of the Nile. The blue lotus has fragrant blue flowers. Several species and numerous varieties are in cultivation as ornamental plants. The Victoria Regia is the name given in honor of Queen Victoria to the most magnificent genus of the order. There is only one species recognized by botanists, a native of the Amazonian region of South America, where it was first observed by the unfortunate botanical traveler Hænke, in 1801, and said to have been met with by the French naturalist D'Orbigny in 1827, but not made known to European horticulturists till after its discovery in British Guiana 10 years later. This noble water lily has floating leaves of a bright green above, and a deep purple or violet on the lower surface, measuring as much as 7½ feet in diameter, with a uniformly turned-up margin of about 3 inches, thus resembling huge shallow trays. The flowers, which are proportionately as large—some measuring 14 inches in diameter —are of all shades from white to pink, and are delightfully fragrant.

Waterloo, Battle of, an important battle won by the allied forces over Napoleon, near Waterloo, a Belgian village 11 miles S. of Brussels, June 18, 1815. The preliminary battles had been at Ligny, June 16 (when Napoleon had defeated the Prussians under Blucher), and at Quartre-Bras, on the same day (when the allies under Wellington compelled the French Marshal Ney to retire). At Waterloo the French numbered about 72,000. The allies (British, Dutch, and Germans), under Wellington, had about 67,000; the Prussians (about 50,000 more), under Blucher, came up in time to take part in the close of the battle, and in the pursuit. The battle began about 11:30 A. M. Briefly it may be said to have consisted of a series of brilliant but unsuccessful charges made by the French, and dogged resistance on the part of the British; in the evening the French Old Guard charged, but unavailingly; after which the allies advanced. The French lost about 35,000, and many prisoners; the allies about 22,000. Marshal Grouchy, though he defeated Blucher at Wavre, June 18, failed to prevent him from joining Wellington, and himself failed to come to Napoleon's aid, though but a few miles

distant. The rout of the French was complete, and the disaster final to Napoleon, the result being his deposition and exile to St. Helena.

Waterloo, city and capital of Black Hawk county, Ia.; on the Cedar river and the Illinois Central and other railroads; 53 miles N. W. of Cedar Rapids; has fine waterpower; is in a fertile grain section; manufactures gasoline engines, refrigerators, locomotives, paper, machinery, flour, and woolen goods; and has a Collegiate Institute, Conservatory of Music, and a School for Stammerers. Pop. (1930) 46,191.

Waterloo, Stanley, an American author; born in St. Clair co., Mich., May 21, 1846; was editor of St. Louis "Journal," and Chicago "Tribune;" later editor-in-chief of the Chicago "Mail." He died in 1913.

Water Melon, a favorite and delicious fruit cultivated in the United States, India, China, Japan, the Eastern Peninsula, Egypt, etc., for its juice, which is cool and refreshing, but somewhat insipid. It is the melon of Scripture.

Water Meter, a contrivance for measuring the amount of water received or discharged through an orifice.

Water Power, a general phrase applied to the various means by which the energy of moving water may be utilized. To make such a source of energy effectual, it is necessary and sufficient to have the water falling from a higher to a lower level. Such conditions more or less favorable exist in all streams, though in many cases the fall is so slight and the velocity of the water so small that practically no useful work can be obtained. Of the various machines by which the necessary transformation is usefully effected, the most common are what are known as water wheels, in their several forms of turbines, undershot wheels, breast wheels, and overshot wheels.

Waterproof Cloth, cloth rendered impervious to water. There are numerous processes for waterproof fabrics of all kinds. The earliest patent, that of Macintosh (1823), consisted in covering cloth with a paste obtained by dissolving caoutchouc in benzol or coal naphtha. In the treatment of cotton and linen cloth a small proportion of sulphur is generally added. A thin layer of this rubber solution is spread on the fabric by special machinery, after which the cloth is doubled, pressed, and finished in calenders, the waterproof layer being thus in the center of the finished material. Textiles thus manipulated become also impervious to air, and from a hygienic point of view unsuitable for prolonged personal wear. This led to the introduction of other solutions and methods of application intended to produce fabrics, which, while resisting rain, do not altogether obstruct ventilation. Consecutive dipping of cloths in soap and alum solutions, or in gelatine and gall solutions, or in a solution of acetate of lead and then in a solution of alumina, has been resorted to with more or less success. The substance called algin, obtained from the seaweed, has been strongly recommended for the same purpose. Another recent patent process consists in treating the fibers in the solution instead of the manufactured textile, and the fabric thus produced, while rain-resisting, offers the same ventilation as ordinary materials.

Water Rabbit, an American species, most abundant in the swampy tracts bordering on the Mississippi and its tributaries in the Southwestern States, whence it is also called the swamp hare. It is an excellent swimmer, and subsists chiefly on the roots of aquatic plants.



WATER RAIL.

Water Rail, a bird generally distributed over America and Europe, and fairly common, though not often seen, from its shy, retired habits. It frequents marshes and bogs, and

swims and dives well, but is bad on the wing. It is a delicious bird for the table.

Water Rattle, the diamond rattlesnake. It sometimes reaches eight feet in length; yellowish-brown with dark brown spots, belly yellowish, tail black or barred with black. Found in damp and shady places from North Carolina to Texas, and varieties of it range into California and Mexico. It is exceedingly poisonous.

Waters, Clara Erskine (Clement), an American author; born in St. Louis, Mo., Aug. 26, 1834. In 1883–1884 she made a tour round the world. The first of her many publications was the "Simple Story of the Orient."

Waterspout, a remarkable phenomenon occurring for the most part at sea, but occasionally on land, though generally in this latter case in the neighborhood of water. A waterspout at sea is usually formed in the following manner: A dense cloud projects from its center a body of vapor, in form something like a sugar loaf with the point downward. This cone is agitated by the wind till it assumes a spiral form, and gradually dips more and more toward the sea, where a second cone is formed having its point upward. The clouds above and the water below are violently agitated by the physical influences at work. Suddenly the descending and ascending cones of water or vapor meet in mid-air, and form one united pillar which moves onward vertically in calm weather, but obliquely to the horizon when acted on by the wind. The junction of the two cones is generally accompanied by an electric flash. After continuing in this form for a short time the waterspout bursts, in some cases with terrific violence, and to the destruction of anything in the vicinity. Many a ship has been overwhelmed in this manner, and sunk in a moment with all on board. In November, 1855, five vessels were destroyed by a waterspout in the harbor of Tunis. Waterspouts on land are cones or pillars of vapor descending from the clouds. Land waterspouts are usually very destructive in their effects. On Aug. 30, 1878, the town of Miskolcz, in Hungary, was destroyed by a waterspout with considerable loss of life. These phenomena are, however, more common in India than in Europe. One which occurred at Dum-Dum, near Calcutta, was ascertained to be 1,500 feet in height, and it deluged half a square mile of territory to a depth of six inches.

The cause of these phenomena has been assumed to be (1) electricity; (2) vortical motion; or (3) a combination of these causes. M. Weyher has, however, succeeded in producing them artificially, and his method shows that vortical motion is the great factor in the production of them.

Watertown, city and capital of Jefferson county, N. Y.; on the Black river and the Rome, Watertown & Ogdensburg railroad; 69 miles N. of Syracuse, 10 miles E. of Lake Ontario; is the metropolis of a large farming and dairying section; has abundant water-power from the river; manufactures paper, flour, steam engines, air-brakes, printing presses, and electrical apparatus; and contains a State armory, Flower Public Library, and Henry Keep Home for the Aged. Pop. **(1930) 32,205.**

Watervliet, a city in Albany county, N. Y.; on the Hudson river, the Erie canal, and the Delaware & Hudson railroad; opposite Troy; is especially noted as the site of a famous National arsenal and gun foundry; has also extensive car works, bell foundry, and manufactories of woolen goods, chains, architectural iron works, and collars and cuffs. Pop. **(1930) 16,083.**

Watkins, John Elfreth, an American scientist; born in Ben Lomond, Va., May 17, 1852; was graduated at Lafayette College in 1871; was mining engineer for the Delaware and Hudson Canal Company in 1871–1872. He was curator of the United States National Museum in 1877–1892, and was made superintendent and curator of its technological collections in 1895. His publications include "History of the Pennsylvania Railroad, 1846-1896"; "The Evolution of the Railway Passenger Car";

and many papers on the evolution of the telegraph, railroads, etc. Died 1903.

Watson, George Lennox, an English naval architect; born in Glasgow, Scotland, Oct. 30, 1851; received a collegiate education, learned the trade of shipbuilding; and in 1872 began business in Glasgow as a naval constructor. He became widely known in 1880 as the builder of the yacht "Vanduara," which out-classed the Prince of Wales' celebrated yacht "Formosa." In 1887 he built the "Thistle" and later the "Valkyrie II." and "Valkyrie III." to compete for the "America" cup. In 1893 he designed the "Britannia" for the Prince of Wales, a yacht said to be the fastest racer in the world. In all he designed over 400 vessels, including steam yachts, cargo, passenger steamers, etc. He died Nov. 12, 1904.

Watson, James Craig, an American astronomer; born in Ontario, Can., Jan. 28, 1838; was graduated at the University of Michigan at the age of 19, and appointed Professor of Astronomy in that institution at the age of 21; called to the chair of astronomy in the University of Wisconsin in 1879. He was the discoverer of 23 asteroids, and received the Lalande medal of the Paris Academy of Sciences for the discovery of six of them in one year. He was a member of the Eclipse Expeditions to Iowa in 1869 and to Sicily in 1870, and took charge of the Transit of Venus Expedition to Peking, China, in 1874. He was also the discoverer of several comets. His most lasting work was the writing of his "Theoretical Astronomy," a standard work on the computation of orbits and the theory of perturbations. He died in Madison, Wis., Nov. 23, 1880.

Watson, John, pseudonym Ian Maclaren, an English clergyman and author; born in Manningtree, Essex, England, Nov. 3, 1850; was graduated at Edinburgh University (1870); studied theology at New College, Edinburgh, and Tubingen; ordained minister of the Free Church, Logiealmond, Perthshire (1875); called to Free St. Matthew's, Glasgow (1878); translated in 1880 to Sefton Park Church, Liverpool, one of the most important congregations of the Presbyterian Church of England; received Hon. D. D. in 1895 from St. Andrews University, and a similar degree in 1897 from Yale University, where he lectured on preaching (1896). Till 1893 Dr. Watson was known as a popular preacher and able minister; but in that year he acquired additional distinction and wider fame by writing a series of Scotch idylls for the "British Weekly." When collected and published in book form under the title of "Beside the Bonnie Brier Bush," became widely popular and were followed by "The Days of Auld Lang Syne," "Kate Carnegie and those Ministers," "A Doctor of the Old School," "Afterwards," etc. He resigned his position in Liverpool in 1905. During a lecture tour in the United States, he died at Mount Pleasant, Ia., May 6, 1907.

Watson, John Crittenden, an American naval officer; born in Frankfort, Ky., Aug. 24, 1842; was graduated at the United States Naval Academy in 1860; in 1861 promoted to master and attached to the "Sabine"; in 1862 transferred to Farragut's flagship, the "Hartford," on which he served through the war, being in the battles at Forts Jackson and St. Philip, the passage of the Vicksburg batteries in 1862, passage of Port Hudson in 1863, and Mobile Bay in 1864. During the latter engagement Admiral Farragut took up his position in the port-mizzen rigging, the better to observe the progress of the fight. Lieutenant Watson, seeing the danger to which he was exposed, procured a rope and lashed him to the rigging. He was made commodore Nov. 7, 1897. In the Spanish-American war he commanded the blockading squadron on the N. Cuban coast, and organized a fleet which it was said was intended to operate against the coast cities of Spain. In 1899–1900 he commanded the Asiatic Fleet; rear-admiral in 1899; retired in 1904.

Watson, Thomas E., an American journalist and politician; born in Columbia co., Ga., Sept. 5, 1856; member of Congress (1891–93); was the People's party nominee for Vice-Pres-

ident of the United States in 1896, and for President in 1904; published a Populist paper in Atlanta, Ga., and a magazine in New York city; and was prosecuted for his writings in 1914–16. Died, 1923.

Watson, William, an American scientist; born in Nantucket, Mass., Jan. 19, 1834; was graduated at Harvard University in 1857; Professor of Mechanical Engineering and Descriptive Geometry in the Massachusetts Institute of Technology in 1865–1873; and became secretary of the American Academy of Arts and Sciences in 1884. In 1860–1863 he gathered information which was used in 1864 in founding the Massachusetts Institute of Technology. He died Sept. 30, 1915.

Watt, the name of the electrical unit of activity or rate of doing work. It is measured by the product of the voltage or electromotive force of the source into the current supplied. Thus a dynamo which is yielding 30 amperes at a voltage of 100 is working with an activity of 3,000 watts. The watt is equal to 0.735 foot-pound per second; so that one horse power per second is equal to 746 watts. It is customary to use the kilowatt as the practical unit. It is equal to 1,000 watts or 1.2 horse power per second.

Watt, James, a British inventor; born in Greenock, Scotland, Jan. 19, 1736. Having determined to adopt the trade of mathematical instrument maker he went to London (1754) to learn the art, but ill-health compelled him to return after only a year's apprenticeship. Shortly after his return he endeavored to establish himself in Glasgow. The corporation objecting, he was appointed in 1757 mathematical instrument maker to the university, and resided within its walls till 1763, when he removed into the town. From this time till 1774 he acted as a civil engineer—made several surveys for canals and harbors, and some of his plans were afterward carried into execution. It was during this period that he conceived and gave shape to his improvements on the steam-engine, which have rendered his name famous. He established works at Birmingham, retired from business in 1800, and died Aug. 25, 1819.

Watterson, Henry, an American journalist; born in Washington, D. C., Feb. 16, 1840. His first work as journalist was with the "Democratic Review," and "The States," in Washington, D. C. He edited the "Republican Banner," Nashville, Tenn., before and after the Civil War, in the interim serving with distinction in the Confederate army. He edited, in Louisville, Ky., the Louisville "Journal" (1867–1868); and the Louisville "Courier-Journal." Died, 1921.

Wattignies, a village of France, Department of Nord, 5½ miles S. E. of Maubeuge; was the scene of a battle during the French Revolutionary War, fought Oct. 15–16, 1793, in which the French defeated the Allies besieging Maubeuge; also was in the fighting zone in the World War.

Watts, Isaac, an English hymnologist; born in Southampton, England, July 17, 1674. He studied at a Nonconformist academy at Newington, London; was appointed (1698) assistant clergyman to the congregation worshiping in Mark Lane; some years after (1702) sole pastor of the same body. Forced by bodily weakness to resign his charge (1712), he spent the rest of his life at Abney Park, near London. He wrote "Hymns and Spiritual Songs"; "Divine and Moral Songs for the Use of Children"; "A Manual of Logic"; several volumes of "Sermons," besides other works of less note. He died in 1748.

Waukegan, city and capital of Lake county, Ill.; on Lake Michigan and the Chicago & Northwestern railroad; 35 miles N. of Chicago; has an elevated site, a fine harbor, and popularity as a health and summer resort; ships much grain, lumber, coal, livestock, salt, and fish; and has sugar-refineries and steel, brass, and wire works. Pop. (1920) 19,226.

Wausau, city and capital of Marathon county, Wis.; on the Wisconsin river and several railroads; 200 miles N. W. of Milwaukee; is in a fine farming section, and is otherwise chiefly engaged in the lumber industry and in granite quarrying; is the seat of the County Insane Asylum. Pop. (1920) 18,661.

Wave, one of a series of undulating inequalities on a surface; an undula-

tion; a swelling outline. The undulating streak or line of luster on cloth, watered and calendered. Anything which advances and recedes, rises and falls, comes and goes, or increases and diminishes with some degree of regular recurrence, like a wave; as, a wave of prejudice, a wave of popularity, etc. A waving or undulating motion; a signal made by waving the hand, a flag, or the like.

In physics, an undulation; a movement which, though it seems progressive, is in reality only up and down, or, to a certain extent, to and fro, though it is transmitted to a distance by the fact that at each successive point the otherwise similar motion of a single particle takes place a little later in time—the time which it takes for the motion to be communicated from the preceding moving particle. Waves exist in water, in air (sound waves), in ether (light waves), etc. A wave on the ocean alternately rises into a ridge and sinks into a depression (the trough of the sea). Anything floating, say a quantity of sargasso seaweed, rises on a billow and sinks again as the wave falls, without otherwise changing its place. Even the undulatory movement affects the water only to a few feet in depth, where, unless there are submarine currents, all is still. When a wave comes inshore and enters a narrow gulf, it becomes affected both by the return of the reflex waves from its sides and the friction of the bottom, if the water be shallow, so that instead of a movement mainly up and down, it now becomes progressive, and breaks in a series of billows on the sands or rocks. In the former case the water runs up the sand, and then recedes considerably before the next wave comes in. Sea waves are mainly caused by the wind. If a breeze blowing off the shore cause ripples near the land, these will rise higher the farther they are from the shore if the cause which brought them into being continues to operate. Out on the open ocean they rise to some feet in elevation, but it is a great exaggeration to call them "mountains high"; they have, however been witnessed approximately 60 feet from trough to summit in the Atlantic. When they rise into a sharp ridge, and the wind is strong, they crest over, break, and fall on the leeward side with abundant spray; but this does not occur on the ocean to the same extent as near the shore. The force of waves is so great that, geologically viewed, they are a potent force in altering the conformation of coasts.

Wavre, a town of Belgium, in Brabant, 15 miles S. E. of Brussels; is principally engaged in the manufacture of leather, cotton, yarn, and hats. Here the French under Grouchy gained a useless victory over the Prussians while Napoleon was being defeated at Waterloo, June 18, 1815.

Wax, a name given to various animal and vegetable substances having analogous physical peculiarities, but differing somewhat in chemical constitution and in other properties. They are all hydrocarbon compounds allied to oils and fats, but common wax differs from the ordinary fats in containing no glycerin. Common wax, which forms the honeycomb of the various species of bees, is in its unbleached condition a hard unctuous solid, possessing usually a faint sweetish odor, but no taste. It is easily separated from the extraneous matter of the comb by melting in water, when the wax floats on the surface of the water as a thin, oily fluid, which is drawn off and allowed to solidify into cakes. A large amount of unbleached wax from almost all regions is annually imported into the principal countries. The preparation of purified or white wax is accomplished by exposing the substance in very thin flakes or shreds to the influence of the atmosphere and light, the wax being periodically watered and turned, as is done in the case of grass bleaching of linen, etc. When the whole of the surface color has disappeared the wax is remelted, and a new surface is thereby obtained for exposure, and the treatment is thus continued till a uniform white color is obtained throughout the mass. It is semi-transparent, tasteless, and inodorous, softening so as to admit of being molded by the fingers at 85° F., and melting at 145° F. It is chiefly used for making candles of

unequalled beauty and illuminating effect, for modelling and making wax flowers and fruits. Medicinally, white wax has emollient properties, and is chiefly employed as an ingredient in ointments and in the preparation of simple ointment. Yellow wax is also used as an ingredient of plasters and ointments. Owing to its high price, white wax is much adulterated with spermaceti and inferior waxes, and even with starch, etc.

Wax Tree, a genus of tree in which some of the tropical American species yield a copious supply of the yellow resinous juice characteristic of the order. This gum resin so much resembles gamboge in appearance that it is called American gamboge: it possesses like purgative properties.

Waxwing, an insessorial bird belonging to the dentirostral section of the order. It derives its names from the appendages attached to the sec-



BOHEMIAN WAXWING.

ondary and tertiary quill feathers of the wings, which have the appearance of red sealing-wax. An American waxwing is the cedar bird.

Wayland, Francis, an American educator; born in New York city, March 11, 1796; was graduated at Union College in 1813, and was president of Brown University in 1827–1855. He was the author of many valuable works, including: "Elements of Moral Science," "Elements of Political Economy," "Limitations of Human Responsibility," "Domestic Slavery Considered as a Scriptural Institution," "Elements of Intellectual Philosophy," etc. He died in Providence, R. I., Sept. 30, 1865.

Wayne, Anthony, an American military officer; born in East Town, Chester co., Pa., Jan. 1, 1745; became a land surveyor; was an intimate friend of Franklin, and early took an active interest in public affairs. Having married and settled to farming (1767), he was elected to the Pennsylvania convention and Legislature in 1774, served on the committee of safety, and in 1775 raised a regiment with which he took part in the campaign against Canada. He fought with distinction and was wounded at the battle of Trois Rivieres (Jan. 3, 1776); held the fortress of Ticonderoga and Mount Independence till May, 1777; and, after receiving the commission of Brigadier-General, led a division at Brandywine (Sept. 11), and commanded the right wing at Germantown (Oct. 4). He made a dashing raid on the British lines in the winter of 1777–1778, carrying off a great quantity of supplies, and on the night of July 15, 1779, achieved the most brilliant of the American victories in the storming of Stony Point, for which he received a gold medal and the thanks of Congress. By a bayonet charge he rescued Lafayette in Virginia in 1782; made a daring attack on the whole British Army at Green Spring (July 6), and defeated the British and Indians in Georgia. After the war "Mad Anthony" retired quietly to his farm, but he was made Major-General in 1792, and again took the field, this time against the Western Indians, whom he overthrew at Maumee Rapids, and forced to conclude the treaty of Greenville (1795). On his way back to his farm at Waynesboro he died at Presque Isle (now Erie), Dec. 15, 1796. A monument was erected to him at Waynesboro in 1809.

Waynesburg College, a coeducational institution in Waynesburg, Pa.; founded in 1851 under the auspices of the Cumberland Presbyterian Church.

Weasel, in zoölogy, the genus Putorius; length about 12 inches, of which the tail constitutes nearly a quar-

ter; body extremely slender and arched, head small and flattened, eyes black and remarkably quick and lively, ears short and rounded; the neck is long, being but little shorter than the trunk and very flexible; tail short, and without a terminal tuft of hair; legs short, and furred to end of toes. Upper part light reddish-brown, under surface quite white. It feeds on mice and rats, moles and small birds, and, according to Bell, it would appear that this animal ought rather to be fostered as a destroyer of vermin than extirpated as a noxious depredator. Occasionally the weasel becomes white in winter, though the tail always retains its reddish tinge, as that of the ermine does its black tip.

Weather Bureau, the government office maintained by all civilized nations for the systematic observing and predicting of the weather from day to day. Many of these were established before weather predictions were considered practicable or even possible, and in such offices the original object of the institution was the collection of climatic statistics considered as an important item in the description of the country and the study of its agriculture, diseases, and other vital phenomena. Of such older statistical bureaus may be instanced the Weather Bureau, formerly of the Signal Office in the Department of War at Washington, but now a part of the Department of Agriculture. The appointment of official predicters in all countries whose territories are sufficiently well covered by telegraph stations is at once a demonstration of the revolution that has taken place in our ideas with regard to the utility of meteorology, concerning which science it is only a comparatively few years since prominent astronomers and physicists expressed grave doubts as to the value of the great accumulation of observations, and as to the possibility of developing any thing more than a crude and useless guess as to the weather of the forthcoming day.

The bill introduced by General Paine, after some modifications, became a law, Feb. 4, 1870. Under this and subsequent laws the meteorological work, at first conducted by the chief signal officer of the army, has come to be the most extensive and in some respects the most important of that done by any single government office; its growth and success is largely due to the foresight of General Myer, the enthusiasm of General Hazen, and the economy of General Greely. The evident utility and great popularity of the work of the weather bureau proved an immediate stimulus to the development of similar work in Europe, and since 1872 the larger weather bureaus throughout the world have been established, the older and smaller ones have been modified, and meteorology, in place of being considered as a branch of chemistry or physics, or a chapter of statistics, is treated like astronomy as an independent, well-organized science, whose field of work is quite definite, and whose utility is unquestioned. On July 1, 1891, the United States Weather Bureau was made a branch of the Department of Agriculture. It has over 1,000 employes, and the average of correct forecasts is four out of five.

Weather Fish, called also the mud fish and thunder fish. It is about a foot in length, dark-brown above, flecked with black; abdomen orange, with black spots. In Germany and Austria it is regarded as a weather prophet, because it usually comes to the surface about 24 hours before bad weather, and moves about with unusual energy. This habit has sometimes led to its being confined in a glass globe as an animated barometer.

Weather Signal, a signal for indicating weather conditions. Five flags are used by the United States Weather Bureau to indicate the temperature and ordinary conditions of the weather. They are numbered 1 to 5, but some are used in couples to form combinations. No. 1 is a perfect white square and indicates "clear or fair weather." No. 2 is all blue, also square, and its meaning is "rain or snow." No. 3 is a black triangle and is called the "temperature signal." It is always used in combination with either the white or blue square. When placed above the white or blue flag it means that the weather will be warmer, and when below, that it will be colder. When it is omitted altogether, the significance is that the tempera-

ture will be stationary. Sometimes three flags are used in combination. For example, when the triangular flag is at the top of the pole, with the white square immediately below it, and the blue square below the white, the signal reads "warmer, fair weather, followed by rain or snow." No. 4 is the "cold wave" signal. It is a white square with a black square in the center of the white. It shows up very clearly, and can never be mistaken for anything else. No. 5 indicates "local rains or showers." It is a square flag, of which the upper half is white and the lower blue.

Weaver, Aaron Ward, an American naval officer; born in the District of Columbia, July 1, 1832; was graduated at the United States Naval Academy in 1854. In 1858–1859 he cruised along the African coast in the sloop "Marion," and returned in command of the prize slaver "Ardennes." He served with distinction through the Civil War, participating in numerous engagements; was promoted commander July 25, 1866; captain, Aug. 8, 1876; and rear-admiral, June 27, 1893; and was retired Sept. 26, 1893.

Weaver, James B., an American lawyer; born in Dayton, O., June 12, 1833; was admitted to the bar in 1854; served in the Union army during the Civil War, becoming a Brigadier-General of volunteers. After the war he practised law in Iowa; filled several offices in that State; edited the "Iowa Tribune," published in Des Moines; was a member of Congress in 1879–1881; the Greenback candidate for President of the United States in 1880; again in Congress in 1885–1889; and in 1892 again became a candidate for the presidency, this time on the People's party ticket. He died Feb. 6, 1912.

Weaver Bird, a popular name for a species of birds whose names have reference to the remarkable structure of their nests. The weaver birds are large finches, with somewhat elongated bodies, moderate wings, long tails, and very bright coats, the latter often varied in the breeding season. Yellow and yellowish-red are the prevailing tints, but species occur in which black, red, white, or gray predominates. The weaver birds are extremely social, and many of the species live in large colonies during the period of incubation. The nests of the various species differ considerably in shape and general structure, some building a separate nest for the male, while the female sits in another on her eggs, till relieved by her mate; others again contain more than one chamber, as that of the golden weaver bird; while the social weaver birds construct an umbrella-like roof, under which from 800 to 1,000 separate nests have been found. But in all cases fibers, slender



WEAVER BIRD AND NEST.

twigs, or blades of grass are the materials employed, the whole being tightly woven, after having been rendered more flexible and adhesive by the application of saliva. The nests themselves consist of a more or less globular portion, elongated into a tube below, with the entrance at the bottom or at the side. They are very generally suspended at the extremities of branches, and often over water, probably as affording security, against monkeys, snakes, and other enemies. The Mahali weaver bird is said to insert thorns into its nest as a further

protection against marauders. It is a noteworthy fact that the golden weaver bird has begun to build on the telegraph wires by the side of the railway in Natal, owing to the rapid destruction of the willows before advancing civilization.

Weaving, the art of interlacing yarn threads or other filaments by means of a loom, so as to form a web of cloth or other woven fabric. In this process two sets of threads are employed, which traverse the web at right angles to each other. The first set extends from end to end of the web in parallel lines, and is commonly called the warp; while the other set of threads crosses and interlaces with the warp from side to side of the web, and is generally called the weft or woof. In all forms of weaving the warp threads are first set up in the loom, and then the weft threads are worked into the warp, to and fro, by means of a shuttle. It was by this fundamental process of interlacing two sets of thread in looms of simple mechanism that the mummy cloths of Egypt, the fine damasks and tapestries of the Greeks and Romans, the Indian muslins, the shawls of Cashmere, and the famed textile fabrics of Italy and the Netherlands were produced. From the latter countries weaving by means of a hand loom was introduced into England.

This loom consists of a frame of four upright posts braced together by cross beams, the center beam at the back being the warp beam, the beam in front being that on which the web is wound, while just below this, in front, is the breast beam for the support of the weaver at his work. At the top of the loom is an apparatus by which the heddles are lifted or lowered by means of treadles under the foot of the weaver. These heddles consist of two frames from which depend cords attached by a loop or eye to each thread in the warp. As these threads are attached to the frames, alternately, it follows that when one heddle is raised every second thread in the warp is also raised, while the remaining threads are depressed; and this is called shedding the warp. When the warp threads are thus parted there is left a small opening or shed between the threads, and it is through this opening that the weaver drives his shuttle from side to side. The shuttle, which is hollow in the middle, contains the weft-thread wound round a bobbin or pirn, and as the shuttle is shot across the web this weft thread unwinds itself. When the thread is thus introduced it is necessary to bring it to its place in the fabric. This is accomplished by means of the lay or batten, which is suspended from the top of the loom, and works to and fro like a pendulum by an attachment of vertical rods at each side called the swords. Attached to the lay is what is called the reed, which is a sort of comb having a tooth raised between every two threads of the warp, and so by driving up the lay after a weft thread has been introduced the weaver strikes home that thread to its place in the cloth.

A great improvement was made on the hand loom when John Kay about 1740 invented the fly shuttle, as it was called. This enabled the weaver to drive the shuttle both ways with the right hand by means of a cord attached to a box or trough placed at each end of the shuttle race, which impelled the shuttle to and fro at each jerk of the cord. But the most important improvement was made on the hand loom by Joseph Jacquard of Lyons, who, in 1801, invented an apparatus by which the most intricate patterns could be woven as readily as plain cloth. This is accomplished by an ingenious arrangement of hooks and wires, by means of which the warp threads are lifted in any order and to any extent necessary to make the shedding required by the pattern. The order in which these hooks and wires are successively lifted and lowered is determined by means of a series of pasteboard cards punctured with holes, the holes corresponding to a certain pattern and the cards passing successively over a cylinder or drum. The hooked wires pass through these holes and lift the warp threads in an order which secures that the arranged pattern is woven into the fabric. When the pattern is extensive the machine may be provided with as many as 1,000 hooks and wires.

Another development was made in

the art of weaving by the invention of the power loom by the Rev. E. Cartwright in 1784. In the power loom, which has been gradually improved and adapted to steam power, the principal motions of the old method of weaving, such as shedding the warp threads, throwing the shuttle, and beating up the thread, are still retained. The frame of the power loom is of cast iron, and motion is communicated to the loom by means of a shaft, the stroke of the lay being made by cranks attached to the driving shaft, while the shuttle is thrown by means of a lever attachment at the center of the loom. Though the principle of the loom is the same in all kinds of weaving, yet there are numberless modifications for the production of special fabrics. The lappet loom is one suitable for weaving either plain or gauze cloths, and also for putting in representations of flowers, birds, or the like.

Cross weaving is a term applied to that process in which, as in gauze weaving, the warp threads, instead of lying constantly parallel, cross over or twist around one another, thus forming a plexus or interlacing independent of that produced by the weft. Double weaving consists in weaving two webs simultaneously one above the other, and interweaving the two at intervals so as to form a double cloth. Kidderminster or Scotch carpeting is the chief example of this process. Pile weaving is the process by which fabrics like that of velvets, velveteens, corduroy, and Turkey carpets are produced. In the weaving of these fabrics, besides the ordinary warp and weft, there is what is called the pile warp, the threads of which are left in loops above the surface till cut, and the cutting of which constitutes the pile.

Webb, Alexander Stewart, an American educator; born in New York city, Feb. 15, 1835; was graduated at the United States Military Academy in 1855; entered the Civil War as major of the 1st Rhode Island Infantry, Sept. 14, 1861; served with distinction and was wounded at Gettysburg; was in the Rapidan and Wilderness campaigns; promoted lieutenant-colonel 49th Infantry, July 26, 1866; transferred to the 5th Infantry, March 15, 1869; brevetted Major-General, U. S. V. and U. S. A.; and discharged, Dec. 3, 1870. He was president of the College of the City of New York in 1869–1902; wrote, "McClellan's Campaign of 1862." He died Feb. 12, 1911.

Webb, Charles Henry (pen name John Paul), an American journalist and humorist; born in Rouse's Point, N. Y., Jan. 24, 1834. His journalistic work was done on the New York "Times" (1860–1863); the "Evening Bulletin," and the "Californian," San Francisco (1863–1866; the latter he founded); and the New York "Tribune," for which, mainly, his humorous articles were written. He wrote several burlesque dramas, etc. He died May 24, 1905.

Webb, James Watson, an American military officer and diplomatist; born in Claverack, N. Y., Feb. 8, 1802. Having a taste for military life he obtained a lieutenancy in the artillery; became adjutant in 1825, served for a time under General Scott; resigned from the army in April, 1827, to take up journalism. He was connected with the "Morning Courier," New York (1827–1829); "The Morning Courier and New York Enquirer" (1829–1859). He died in New York city, June 7, 1884.

Weber, Carl Maria von, a German composer; born in Eutin, Germany, Dec. 18, 1786. His father was a musician, and had him carefully educated. He learned for a time painting and engraving, but music was his passion, and he began to compose at the age of 12. At the close of 1816 he settled at Dresden, where he was the founder and director of German opera. In 1822 he went to Berlin, to bring out his "Der Freischutz" (The Free-Archer), the most celebrated of his compositions, and which at once gave him rank with the great masters of his art. In 1826 Weber visited London to superintend the production of his "Oberon," which he had composed for Covent Garden Theater, and was brought out, conducted by Weber himself, April 12, 1826. Soon after unmistakable symptoms of pulmonary disease presented themselves, and the

health of the great composer sank rapidly, and his illustrious career closed on June 5, 1826, when he was found lifeless in his bed.

Webster, Albert Falvey, an American story-writer; born in Boston, Mass., in 1848. His best stories were printed in "Scribner's," "Appleton's," and the "Atlantic Monthly," and include: "Our Friend Sullivan," "Little Majesty," "An Operation in Money," "My Daughter's Watch," "Miss Eunice's Glove." He died at sea, Dec. 27, 1876.

Webster, Daniel, an American statesman and orator; born in Salisbury, N. H., Jan. 18, 1782. He was a child of the wilderness, and but for our system of school education, which, even then, pushed the means of instruction into remote solitudes, he would never have been enabled to bring his great faculties to bear in public life. Daniel was the second son of Ebenezer Webster, a small farmer and justice of the county court. He entered Dartmouth College in 1797, and taught school in winter to pay his expenses. He was graduated in 1801, and commenced to study law, but was induced, by an offer of a salary of $350 a year, to become preceptor of an academy at Freyburg, Me., paying his board by copying deeds. In 1804, he went to Boston, and entered the law office of Mr. Gore. In 1805 he was admitted to the Boston bar, passed one year in the practice of his profession at Boscawen, and on the death of his father, established himself at Portsmouth, N. H., and married in 1808.

Having engaged in politics as a member of the Federalist party, he was elected to Congress, where he immediately took rank with the foremost men of the country. He took his seat in the special session of May, 1813, and on June 10 delivered his maiden speech on the repeal of the Berlin and Milan decrees. This, and his mastery of the question of currency and finance, secured him a high position. At the close of the session, however, he removed to Boston, where during a period of seven years, he devoted himself exclusively to the practice of his profession, and occupied a position as a counsellor and an advocate, above which no one has ever risen in this country. In 1822, he was a member of the Massachusetts Constitutional Convention, and on Dec. 22, 1822, he pronounced at Plymouth on the anniversary of the landing of the Pilgrims, the first of that remarkable series of discourses, or orations, which put him in the first rank among American orators. In 1829, he delivered an oration at the laying of the corner stone of the Bunker Hill Monument; in 1843, one on its completion. In 1826, he pronounced the eulogy of John Adams and Thomas Jefferson, two fathers and Presidents of the American Republic, who died on the same semi-centenary anniversary of the Declaration of Independence; and in 1851, a patriotic discourse on the laying of the corner stone for the extension of the Capitol at Washington.

In 1822, he was elected to Congress from Boston, and distinguished himself by his speeches on the Holy Alliance, and the Greek revolution, and his labors in the revision of the criminal laws of the United States. In 1826, he was chosen a United States Senator; and in 1830, rose to the height of his forensic renown, in a speech of two days, in the debate with Senator Hayne, of South Carolina, on the right of "nullification." Webster and Clay were the leaders of the opposition during the administration of Jackson and Van Buren. In 1841, he became Secretary of State under President Harrison; remained in the administration of President Taylor till 1843; and was a third time Secretary of State in 1850, in the cabinet of Mr. Fillmore. On various occasions Webster had been an unsuccessful candidate for the presidency. He aspired again to that position in 1852, but his advocacy of compromises on the slavery question had given offense to the Abolitionists, and the choice of the convention assembled at Baltimore fell on Gen. Winfield Scott. The great orator died a few months after, Oct. 24, 1852. Webster's figure was commanding; his countenance was remarkable even in repose, but when animated by the excitement of debate it "spake no less audibly than

his words." His gestures were vehement, without being undignified; and his voice was unrivaled in power, in clearness, and in modulated variety of tone. The most complete edition of his works is that published in 1851, in six volumes 8vo.

Webster, Noah, an American lexicographer; born in Hartford, Conn., Oct. 16, 1758. He was graduated at Yale College in 1778, having served in the Revolutionary War in his junior year; was admitted to the bar in 1781, but relinquished it for teaching in 1782; and in 1788 settled in New York as a journalist. Thence he removed to New Haven in 1798, and thence to Amherst in 1812, returning to New Haven in 1822. In 1783–1785 he published his "Grammatical Institute of the English Language," in three parts, "Webster's Spelling Book," "A Plain and Comprehensive Grammar," and "An American Selection of Lessons in Reading and Speaking." All these works had an enormous sale. His literary activity was henceforth very great, the works issued by him during the next few years including important legal and linguistic studies. In 1806 he published an 8vo. English dictionary, which led the way for his great work, the "American Dictionary of the English Language." In preparing this work he visited England, and he finished the dictionary during an eight months' residence in Cambridge. In June, 1825, he returned to America. The first edition of his dictionary was published in 1828 (2 vols. 4to.); it was followed by a second in 1840; since which time a number of editions have appeared, and the work has grown into the greatly improved and enlarged "International Dictionary." He died in New Haven, Conn., May 28, 1843.

Wedgwood Ware, a superior kind of semi-vitrified pottery, without much superficial glaze, and capable of taking on the most brilliant and delicate colors produced by fused metallic oxides and ochres; so named after the inventor. It is much used for ornamental ware, as vases, etc., and, owing to its hardness and property of resisting the action of all corrosive substances, for mortars in the laboratory.

Wednesday, the name of the fourth day of the week (in Latin, dies Mercurii, day of Mercury), derived from the old Scandinavian deity Odin or Woden.

Weed, the name given to each of those plants which grow wild in cultivated grounds, and injure the crops; which they do both by choking them and by exhausting the soil.

Weed, Stephen Hinsdale, an American military officer; born in New York city in 1834; was graduated at the United States Military Academy in 1854; served in Texas and Florida in 1856–1857; was promoted captain in May, 1861; and had command of a battery in the Maryland, Peninsular, and Northern Virginia campaigns; was chief of artillery in Falmouth, Va., in 1862–1863; promoted Brigadier-General of volunteers for conspicuous gallantry at the battle of Chancellorsville. During the battle of Gettysburg, while holding back the Confederates from an important point on Little Round Top, he was fatally shot. The position was afterward named "Weed's Hill." General Weed died near Gettysburg, July 2, 1863.

Weed, Thurlow, an American journalist; born in Cairo, N. Y., Nov. 15, 1797; was employed as a lad in several printing offices; served as a private in the War of 1812; and afterward edited newspapers in Western New York, till in 1830 he founded the Albany "Evening Journal," an anti-Jackson, Whig, or Republican paper, which became the organ of the party, and which he controlled for 35 years. He was a leading party manager in State and National politics in 1824–1876, exercising almost supreme influence in nominations and appointments, while declining all offices for himself. He was influential in nominating Harrison in 1836 and 1840, Clay in 1844, Taylor in 1848, and Scott in 1852; with Seward and Greeley controlled New York; supported Lincoln and the Civil War; and went for him on a mission to Europe in 1861–1862. In 1867–1868 he was editor of the New York "Commercial Advertiser." He wrote: "Letters from Europe and the West Indies," "Reminiscences," "Autobiography." He died in New York city, Nov. 22, 1882.

Weed, Walter Harvey, an American geologist; born in St. Louis, May 1, 1862; was graduated at the Columbia School of Mines in 1883; and was then appointed geologist on the United States Geological Survey. In 1883–1889 he was on the geological survey of the Yellowstone Park. He discovered that colors in hot springs and deposits in geysers are caused by algæ. He also discovered Death Gulch in that park where bears, elk, etc., are killed by inhaling carbon dioxide gas emitted from an extinct hot spring. In 1889–1898 he was engaged on a general geological exploration of Montana, and made important discoveries.

Week, the space of seven days; the space from one Sunday, Monday, etc., to another; the most obvious and convenient division of the natural or lunar month. The division of time into weeks did not exist among the aborigines of America when the New World was discovered, nor did it exist among the Polynesians, the Japanese, or, it is now believed, the Chinese. It is nearly universal in India, and was found thoroughly rooted when the first Christians went to that country. So has it been from a period of high antiquity in Scandinavia, the names of the several days being connected with identically the same planets in the two regions; so that, if at noon on Sunday in Sweden one could be transported in a moment to India, he would find it Aditwar (= Sunday) there, and so of any other day in the week. The Hebrews, and it is thought the other Semites, had the institution of weeks, the days apparently being simply numbered first, second, third, etc. During the early centuries of their history the Greeks and the Romans had not the institution of weeks, there having been ancient forgery in connection with Homer's oft-quoted passages on the subject. Dion Cassius, in the 2d century after Christ, considered that the week with the planetary names of the days had been introduced into Rome only recently, and from Egypt. The establishment of Christianity under Constantine confirmed the change, and thence the septenary division of time spread to the whole Christian, and subsequently to the Mohammedan world.

Weevil, a popular name for a large number of beetles, marked by the prolongation of the anterior part of the head into a beak or proboscis, generally used by the females as an ovipositor, and by both sexes as a boring organ. They were formerly ranked in one family, but Le Conte constituted them a special group with the title rhynchophora, and divided them into several families. According to some authorities there are about 30,000 species; and most would allow at least half that number. Many of the weevils are dangerous enemies to the agriculturist, destroying grain, fruit, flowers, leaves, and stems.

The boll weevil has done great destruction to cotton. At Dallas, Texas, on November 6, 1903, in an address at the National Boll Weevil and Cotton Convention, James Wilson, Secretary of Agriculture in President Roosevelt's Cabinet, called attention to the defective methods of Texas farming as he had observed them, and declared that under them all the money in the United States Treasury could not exterminate the boll weevil pest. He advocated better methods —particularly deep ploughing. "The United States government," Mr. Wilson said, "had spent during this year more than $1,000,000 in Texas to help the farmers." He declared that the boll weevil pest could not be exterminated, and added: "You cannot keep it this side of the Sabine and Mississippi rivers, either. It is going across."

Weidner, Revere Franklin, an American theologian; born in Center Valley, Pa., Nov. 22, 1851; was graduated at Muhlenberg College, Allentown, Pa., 1869, and at the Lutheran Theological Seminary, Philadelphia, in 1873; was ordained in the Lutheran Church; Professor of Dogmatics and Exegesis at Augustana Theological Seminary, Rock Island, in 1882–1891. In the latter year he became president and Professor of Dogmatic Theology at the Chicago Lutheran Theological Seminary. He died Jan. 5, 1915.

Weighing Machine, a machine for ascertaining the weight of any object; a common balance, a spring balance, a steelyard or the like. The

term also applies to an automatic device that will register the weight of a person standing on a platform after a coin has been dropped into a receptacle through an opening called a slot.

Weight, the force with which a given body is attracted to the earth. It is, in accordance with Newton's Second Law, measured by the product of the mass into the acceleration. For all bodies at the same distance from the earth's center the acceleration is the same; and hence the weight is simply proportional to the mass. Consequently we may compare masses by comparing their weights; and this is really what is done in all operations of weighing.

Weights and Measures. Of the earliest standards of length the principal were the palm or handbreadth, the foot, and the cubit (from elbow to tip of mid-finger). There were two leading cubits: the natural cubit in Egypt, Chaldea, Phœnicia, and Greece = 6 palms = 2 spans = 1½ foot = 18.24 inches; and the royal cubit of Memphis, found also in Babylonia and Chaldea = 20.67 inches. The Greek foot (= 12.16 inches) passed into Italy and was there divided into 12 unciæ (inches); it was afterward shortened, becoming as small as 11.65 inches. The Romans used a 3-foot ulna. The Saxons used an ell or yard of 36 inches, based on the Roman foot. This was continued by the Normans in England, various modifications occurring in the ell. Henry II. and Elizabeth made standard yards of 36 inches.

Two-thirds of a cubit made a "foot"; a cubic "foot" of water weighed a talent. When the "foot" was 2-3 the royal cubit, the talent was 655,566 grains; this was the Egyptian, Hebrew, and Olympic monetary talent, later known as the great Alexandrian talent of brass and the Egypto-Roman talent. A talent half this weight was known as the Alexandrian talent of silver, or 327,783 grains; this was divided into 60 minas of 5,463 grains each; these are the origin of the Saxon moneyer's pound of 5,400 grains = Mint pound or Tower pound = old apothecaries pound of Germany; one such pound, in silver coins, was the original form of "one £ sterling," and was divided into 20 "shillings," or 240 "pence" or pennyweights; each pennyweight was divided into 32 monetary grains (wheat grains), each equal to 0.703125 modern grain. The Tower weight was abolished in 1527. The Saxon ounce contained 416.5 grains = nearly, Roman uncia = 1-12 libra; the libra (= 5,015 grains) was the Greek-Asiatic and Persian mina of 5,015 grains. The Troy pound is 5,760 grains = 12 ounces of 20 pennyweights each. Troy weight is now restricted to gold, silver, and jewels, except diamonds and pearls; the latter are weighed in carats (= 3.1683 grains), which were originally 1-144 of the Alexandrian ounce (the twelfth part of the mina of silver). Various larger pounds were early used for merchandise; in 1303 the "avoirdupois" pound (= 7,000 grains) was in use. The standard of capacity is the gallon, which was in 1824 adjusted so as to contain 70,000 grains, or 10 pounds avoirdupois of water at 62° F. and 30 inches bar. pressure.

Wei-hei-wei, a port of North China, on the Shantung promontory; about 40 miles E. of Chefoo and 115 miles S. E. of Port Arthur. The harbor, about 18 miles in circumference, is deep, and is sheltered on the N. by the small island of Liu-Kung. The port, formerly a Chinese naval station, was captured by Japan in her war with China in 1895, the land forts being taken Jan. 30 and the island Feb. 7. Their occupation was only temporary. By a convention signed at Peking, July 1, 1898, Wei-hei-wei was leased to Great Britain as an offset to the concessions granted to Russia in the Liao-tung peninsula. By Washington Conference, 1922, Great Britain will restore territory to China.

Weiss, John, an American clergyman and author; born in Boston, Mass., June 28, 1818. He published: "Æsthetic Prose," a translation of Schiller's philosophical and æsthetic essays; "Life and Correspondence of Theodore Parker"; "American Religion." He was an earnest abolitionist, and a defender of reason in religion. He died March 9, 1879.

Weissenburg, a town of France; in the province of Alsace-Lorraine; at the foot of the Vosges Mountains; on the Lauter; 34 miles N. N. E. of Strasburg. In the Franco-Prussian War of 1870–1871 a battle took place here on Aug. 4, 1870, the first important engagement between the two armies, in which the French were defeated. The town was a free imperial city of the old German Empire, and from the close of the 17th century till 1870 it belonged to France. Pop. about 6,000.

Weitzel, Godfrey, an American military engineer; born in Cincinnati, O., Nov. 1, 1835; was graduated at the United States Military Academy in 1855; promoted 1st lieutenant of engineers in 1860; was commissioned Brigadier-General of volunteers 1862, and in October defeated a strong Confederate force in Labadieville, La.; was promoted captain of engineers, March 3, 1863, and served in Western Louisiana. In March–April, 1865, he had command of all the troops N. of the Potomac river and marched into Richmond, April 3, 1865; brevetted Major-General, U. S. A., in March, 1865. He died March 19, 1884.

Welch, Ashbel, an American civil engineer; born in Nelson, N. Y., Dec. 4, 1809. In 1862 he became manager of the Pennsylvania railroad lines in New Jersey, and subsequently president. He introduced the block system in railroading in the United States. He died Sept. 25, 1882.

Welland Canal, a ship canal in Ontario, Canada, extending from Port Colborne, on Lake Erie, to Port Dalhousie, on Lake Ontario, a distance of 27 miles. It runs parallel to the Niagara River, and overcomes the obstacle to navigation between the lakes, presented by the Niagara Falls. It was opened to travel in 1833, and has since been enlarged and deepened.

Welles, Gideon, an American statesman; born in Glastonbury, Conn., July 1, 1802; studied law; and in 1826 became proprietor of the Hartford "Times." In 1861 he was appointed by President Lincoln Secretary of the Navy, and filled that office with marked success and credit during the whole of the Civil War. He died in Hartford, Conn., Feb. 11, 1878.

Wellesley College, an American educational institution established in 1870 in the village of Wellesley, Mass., 15 miles S. W. of Boston. The institution is devoted entirely to the higher education of women. The campus contains about 300 acres; which prior to the college establishment comprised a private and highly cultivated country-seat. The institution is non-sectarian, and was founded by Henry F. Durant, of Boston.

Welling, James Clarke, an American educator; born in Trenton, N. J., July 14, 1825; was graduated at Princeton College in 1844; engaged in journalism in 1856–1865, being literary editor of the "National Intelligencer" in Washington. Prior to and during the Civil War he was a strong opponent of secession. He favored the proposition of President Lincoln to free the slaves with compensation to loyal owners, but doubted the constitutionality of the Emancipation Proclamation. He was president of St. John's College, Annapolis, Md., in 1867–1870, and Professor of Belles-Lettres at Princeton College in 1870–1871. In the latter year he was chosen president of Columbian University, Washington, D. C. He died in Hartford, Conn., Sept. 4, 1894.

Wellington, a city and capital of New Zealand; on Port Nicholson, an inlet of Cook's Strait; on the S. W. extremity of the provincial district of Wellington, North Island. Its harbor is 6 miles long and 5 wide. The district of Wellington has an area of 11,003 square miles; pop. (1921) 248,801. It has an equable and healthy climate, but is subject to earthquake shocks. It is intersected by several mountain ranges, but there are many fine agricultural and pastoral districts. Gold was found in 1881.

Wellington, Arthur Wellesley, Duke of, a British general and statesman; born in Dublin, Ireland, April 30, 1769. In 1787 he received a commission and after a rapid series of changes and promotions, attained by purchase in 1793 the command as lieutenant-colonel of the 33d Regiment. During 1794 and 1795 he served in Flanders. In 1796 his regiment was dispatched to Bengal. After the capture of Seringapatam he was appoint-

ed, in 1799, to the administration of Mysore, his brother being at this time governor-general. In 1802 he attained the rank of Major-General. Early in 1805, his health failing, Wellesley obtained leave to return home, and arrived in England in September. From November to February he was engaged as Brigadier-General in Lord Cathcart's expedition to the Continent, which was without result. In January, 1806, he succeeded Lord Cornwallis as colonel. On April 10, 1806, he married Lady Catherine Pakenham, third daughter of the Earl of Longford. He was shortly afterward elected M. P. for Rye, and in April, 1807, was appointed secretary of state for Ireland. In 1809 Wellesley was appointed to take the chief command in the Peninsula, which had been overrun by the French. The famous passage of the Douro, and the defeat of Soult which followed, fittingly opened this campaign. For the victory at Talavera (July 28), the first of a long list that subsequently took place in the Peninsula, the government raised the Commander-in-Chief to the peerage as Viscount Wellington. Toward the end of 1810 Wellington fought the battle of Busaco, which was followed by the famous fortification and defense of the lines of Torres Vedras. On August 12, 1812, Wellington entered Madrid. Next followed the battle of Vittoria (June 21, 1813), for which decisive victory Wellington was given the baton of Field-Marshal; then battles in the Pyrenees, the capture of San Sebastian and the crossing of the Bidassoa into France. In 1814 the battle of Orthez was gained, and in the same year the battle of Toulouse, in which Soult's best troops were routed, and the hopes of France in the Peninsula utterly annihilated. Napoleon abdicated on April 12, and a few days later the war was brought to a close by the signing of conventions with Soult and Berthier. In May the triumphant general was created Marquis of Douro and Duke of Wellington. In July he went as ambassador to France and succeeded Lord Castlereagh as British representative in the Congress of Vienna. In April he took command of the army assembled in the Netherlands to oppose Napoleon, and was in command at the battle of Waterloo, at which Napoleon was defeated. With the return of peace he resumed the career of politics. He accepted the post of master-general of the ordnance with a seat in the cabinet of Lord Liverpool in January, 1819. In 1822 he represented Great Britain in the Congress of Vienna. In 1826 he was appointed high-constable of the Tower. On Jan. 22, 1827 he succeeded the Duke of York as Commander-in-Chief of the forces. On Jan. 8, 1828, he accepted the premiership, resigning the command of the forces to Lord Hill. In January, 1829, he was appointed governor of Dover Castle, and lord warden of the Cinque Ports. In 1830 repeated motions for parliamentary reform were defeated. His opposition to reform made the duke so unpopular that he was assaulted by the mob June 18, 1832, and his life endangered. He accepted office under Sir Thomas Peel in 1834–1841, and again in 1846, when he helped to carry the repeal of the corn laws, which till then he had opposed. In 1842 he resumed the command of the forces on the death of Lord Hill. He died in Walmer Castle, Sept. 14, 1852.

Wells, Clark Henry, an American naval officer; born in Reading, Pa., Sept. 22, 1822; was graduated at the United States Naval Academy in 1846; served through the Mexican War, and accompanied the Atlantic cable expedition in 1857; served through the entire Civil War and later with the squadron off Brazil, and on the coast of Italy. He was promoted rear-admiral April 1, 1884. Died Jan. 28, 1888.

Wells, David Ames, an American political economist; born in Springfield, Mass., June 17, 1828; was graduated at Williams College in 1847, and at the Lawrence Scientific School in 1851; and became assistant professor in the latter institution. In 1866 he was made the chairman of a commission to devise the best means to raise money for the government; in 1866–1870 was a special commissioner of revenue; and in 1879 was appointed a member of the Board of Arbitration for Railroads. He died in Norwich, Conn., Nov. 5, 1898.

Wells, Herbert George, English scientist and author; born in Bromley, Kent, Sept. 21, 1866. He was educated at So. Kensington Royal College of Science, and became known by novels of fictional science, typical of which are "The War of the Worlds," "The First Men in the Moon," etc.

Wells, Horace, dentist, b. in Hartford, Vt., Jan. 21, 1815; studied dentistry in Boston and practised there until 1836, when he returned to Hartford, where in 1844 he inaugurated the painless extraction of teeth by means of nitrous-oxide gas. He died in New York city Jan. 24, 1848.

Wells College, a non-sectarian educational institution for women, founded in 1868 by Henry Wells, at Aurora, N. Y. The college property is valued at about $520,000; the endowment is $404,000; income, over $115,000; average number of faculty, 33; students, 213.

Welsbach Light, an invention of Carl Auer von Welsbach, an Austrian, in 1884. In Europe it is known as the Auer light. It is based upon the discovery that certain materials become incandescent at a low temperature. The process followed is to saturate a combustible filament in the form of a network with a solution of a salt of a refractory earth, such as zirconium. It is then dried out and burned, the combustible element disappearing and leaving a frame of refractory material, which becomes incandescent at a low temperature. The filament is called a mantle and is exceedingly fragile.

Welsh, Herbert, an American philanthropist; born in Philadelphia, Pa., Dec. 4, 1851; was graduated at the University of Pennsylvania (1871); practised art in Philadelphia for several years; became editor of "City and State," a weekly devoted to good government, in 1895. He was one of the founders of the Indian Rights Association.

Welsh, John, an American diplomatist; born in Philadelphia, Pa., Nov. 9, 1805; received a collegiate education; became a sugar importer and was active in public affairs in many capacities; took an active part in the relief measures during the Civil War, especially in connection with a committee that raised $1,000,000 for the Sanitary Commission. In 1873 he became president of the Board of Finance of the Centennial Exposition, receiving from the citizens of Philadelphia, at its close, a gold medal, and the sum of $50,000, with which he endowed the John Welsh chair of English literature in the University of Pennsylvania. In 1878 he became minister to England, but resigned after two years. He died in Philadelphia, April 10, 1886.

Welsh Calvinistic Methodists, a name for the Calvinistic Methodists, the great majority of whose congregations are in Wales, and consist in large measure of members speaking the Welsh tongue.

Welwitschia, a remarkable South African plant. It presents a stem or rhizome forming a woody mass rising to a foot at most above the ground, and having a diameter of from 4 to 5 inches to as many feet, this mass bearing the two original cotyledonary leaves, which, when they reach their full development, become dry and split up into shreds, but do not fall off. Every year short flower-stalks are developed at the base of these leaves.

Wen, an encysted tumor varying exceedingly in size and character, and commonly situated immediately under the skin; but occurring also in some of the internal viscera. The causes of their formation are unknown.

Wenceslaus, or **Wenzel,** an Emperor of Germany and King of Bohemia; born in 1361; was the son of Charles IV., whom he succeeded in 1378. He was a dissolute and cruel prince. He favored the Hussites, but was unable to save the life of Huss. He died in 1409.

Wendell, Barrett, an American author and educator; born in Boston, Mass., Aug. 23, 1855; was graduated in 1877 at Harvard, where he afterward taught as an instructor, an assistant professor, and (from 1898) as full Professor of English. He published: "English Composition"; "Cotton Mather," etc. Died, 1921.

Wends, the name of a section of the Slavonic race, now dwelling mostly in that part of Germany known as Lu-

satia, partly in Prussia, partly in the kingdom of Saxony. In the 6th century the Wends were a powerful people, extending along the Baltic from the Elbe to the Vistula, and S. to the frontiers of Bohemia. They comprised a variety of tribes. To the Wends of today, Prussia is merely a military expression; they have always remained closely united among themselves, preserving the old customs and considering the mingling of races by marriage as opposed to the laws of origin. The distinctions of caste among them are very marked and scrupulously respected. The nominal religion of the Wends is Protestantism, but whatever they are called on the census, they have not materially modified their beliefs nor swerved from their traditions; they present the anomaly of being the last descendants of barbarians, perpetuating in the heart of Western Europe the living memory of an almost forgotten invasion, true to their origin and special characteristics, protected by their forests, their inundations, their rigorous winters, and the peculiar comformation of their strange country from the inroads of the levelling civilization at their very doors.

Wenley, Robert Mark, a Scotch-American educator; born in Edinburgh, Scotland, in July, 1861; was graduated at the University of Glasgow in 1884; and later pursued post-graduate study on the Continent; was assistant Professor of Logic at the University of Glasgow in 1886–1894 and head Professor of the Philosophical Department in 1888–1895. He was made head of the Philosophical Department at the University of Michigan in 1896.

Wentworth, John, an American journalist; commonly known as "Long John" Wentworth; born in Sandwich, N. H., March 5, 1815; was graduated at Dartmouth College in 1836; settled in Chicago; became editor of the "Democrat," with which paper he was connected for 25 years. He was admitted to the bar in 1841; in 1843 he was elected congressman and served six terms. He introduced the first steam fire engine ("Long John") into Chicago, was influential in establishing its public school system, and was twice elected mayor (1857 and 1860). He died Oct. 16, 1888.

Wesel, a fortress town of Rhenish Prussia, at the junction of the Rhine and Lippe rivers, 22 miles from the Netherlands border, 32 miles N. W. of Düsseldorf. Its defensive works consist of a citadel and three detached forts; its town hall dates from 1396; and the Gothic Church of St. Willibrord from 1424–1526. Charlemagne directed his operations against the Saxons from this place. It was occupied by the Spaniards in 1614, by the Dutch in 1629, and by the French in 1672 and 1805, and was ceded to Prussia in 1814. Population (1922) 24,550.

Weser, a river of Germany, formed by the junction of the Fulda and Werra, at Münden, flows generally in a N. W. direction, following a very circuitous course, traverses the city of Bremen, and falls by a wide mouth into the German Ocean. Length, including the Werra, about 450 miles.

Wesley, Charles, an English hymnist; born in Epworth, England, Dec. 29, 1708, younger brother of John Wesley; educated at Westminster School and Christ Church, Oxford. He accompanied his brother to Georgia as an ordained clergyman, but after his return to England he became, in 1738, a preacher in the Methodist connection, and materially assisted the success of the movement by his numerous hymns, large collections from which have been frequently published. Two of his sons, Charles and Samuel, were celebrated for musical genius. He died in London, March 29, 1788.

Wesley, John, an English clergyman; founder of Methodism; born in Epworth, England, June 17, 1703, son of the rector of Epworth; educated at the Charter House, and at Christ Church, Oxford. He took his degree of B. A. in 1724, was ordained deacon in 1725, became a fellow of Lincoln College, and lecturer and moderator in classics in 1726; and took priest's orders in 1728. He now gathered together a number of pupils and companions who met regularly for religious purposes, and by so doing acquired the name of Methodists. Among these companions were Hervey, Whitefield,

and Law. In 1735 Wesley accepted an invitation from General Oglethorpe to go to America to preach to the colonists of Georgia. After a stay of two years he returned to England (February, 1738), and in the following May an important event took place in his inner religious life, namely, his conversion. In June he paid a visit to Herrnhut, the Moravian settlement, returning to England in September. Early in the following year (1739) he began open-air preaching, in which he was for a time associated with Whitefield. His first chapel was built in Bristol in 1739. Having now the sole control of the religious body which adhered to him, he devoted his entire life without intermission to the work of its organization, in which he showed much practical skill and admirable method. His labors as an itinerant preacher were incessant. He would ride from 40 to 60 miles in a day. He read or wrote during his journeys, and frequently preached four or five times a day. He held strongly to the principle of Episcopacy, and never formally separated from the Church of England. He contributed to the collection of hymns, the greater part of which were written by his brother Charles. He died in London, March 2, 1791.

Wesley, Samuel, Sr., an English clergyman; born in Winterborne-Whitchurch, England, in 1662. He was the father of Charles, John, and Samuel, Jr. He wrote "Life of Christ: An Heroic Poem," "Eupolis's Hymn to the Creator," etc. He died in Epworth, April 22, 1735.

Wesley, Samuel, Jr., an English hymnist; born in London, Feb. 10, 1690, son of Samuel. He was headmaster of Bundell's grammar school in Tiverton, in 1732–1739. He remained with the old High Church party, and did not embrace Methodism with his brothers. Editions of his poems have been published in 1736, 1743, and 1862. He is best known by his hymns in the Methodist hymn book. He died in Tiverton, England, Nov. 6, 1739.

Wesleyan Methodism, the largest and most important British Methodist denomination, and the parent of some smaller religious bodies now independent of its government.

Wesleyan University, a coeducational institution in Middletown, Conn. In 1830 the original buildings, North College and South College, which had been erected for a military academy, came into the possession of the New York and New England Conferences of the Methodist Episcopal Church; in 1831 a charter was obtained, and the university opened its doors and offered its services to aid in the training of students, who hitherto had been obliged to seek outside their Church the advantages of higher education. In 1872 the institution was opened to women, quite a number of whom have been graduated with distinction.

Wesselhoeft, Elizabeth ("Lily" Foster Pope), an American writer; born in Dorchester, Mass., Oct. 20, 1840. Among her works are: "Jerry the Blunderer"; "Sparrow the Trump," etc.

Wessex (West Saxons), one of the most important of the Anglo-Saxon kingdoms in England during the 6th, 7th, and 8th centuries, and the early part of the 9th, and that in which the other kingdoms were ultimately merged in the reign of Egbert in 827. It is now comprised in the counties of Devon, Somerset, Wilts, Hants, Berks, and a part of Cornwall.

West, Benjamin, an American painter; born in Springfield, Pa., Oct. 10, 1738, of Quaker parents. After several years of portrait painting in Lancaster, Philadelphia, and New York city, he went to Italy, in 1760, and settling in Rome painted "Cimon and Iphigenia," and "Angelica and Medora." He visited England in 1763, and was so well patronized that he determined to make it his future residence. He painted "Hector and Andromache," "The Return of the Prodigal Son," and a historical painting of "Agrippina," the last for the Archbishop of York, who introduced him to George III., who became his steadfast patron, and gave him commissions to the extent of about $5,000 a year for upwards of thirty years. He painted a series of historical works for Windsor, and for the oratory there a series on the progress of revealed religion. On the death of Reynolds, in 1792, he was elected president of the

Royal Academy. He afterwards painted a number of religious and historical pictures of large size, among them being "Christ Healing the Sick" (in the National Gallery), the "Crucifixion," "Ascension," and "Death on the Pale Horse." "The Death of General Wolfe at Quebec" and "The Battle of La Hogue" are accounted the best of his historical pieces. The 400 historical pictures which he painted show skill in composition and considerable inventive power, but have no real vitality, being tame in style and monotonous in color. His "Death of General Wolfe" was among the first of his productions that attracted public notice, especially for the rational innovation on which he had ventured in it, of painting historical personages in a modern dress. There is in the Pennsylvania Hospital, in Philadelphia, a copy (with some alterations) of "Christ Healing the Sick," which was presented to it by West. He died in London, March 11, 1820.

Westboro, a town of Worcester Co., Mass., 12 miles E. of Worcester. It has boot and shoe factories, Lyman School and an insane asylum. Pop. (1930) 6,409.

West Bromwich, a municipal and parliamentary borough of England, in Staffordshire. Coal and iron mining, and metal manufactures, are its chief industries. Pop. (1921) 73,761.

West Chester, a borough charmingly situated in a fertile district of Pennsylvania, 23 miles W. of Philadelphia. Is the county-seat of Chester Co.; is chiefly a residential town; but has commercial, industrial, and other interests. Pop. (1930) 12,325.

Westerly, a town in Washington co., R. I.; on the Pawtucket river, 44 miles S. W. of Providence. It is widely known for its extensive and excellent granite quarries, and has manufactures of flannel, cotton and woolen goods, and printing presses. Pop. (1930) 10,997.

Western Australia See AUSTRALIA, WESTERN.

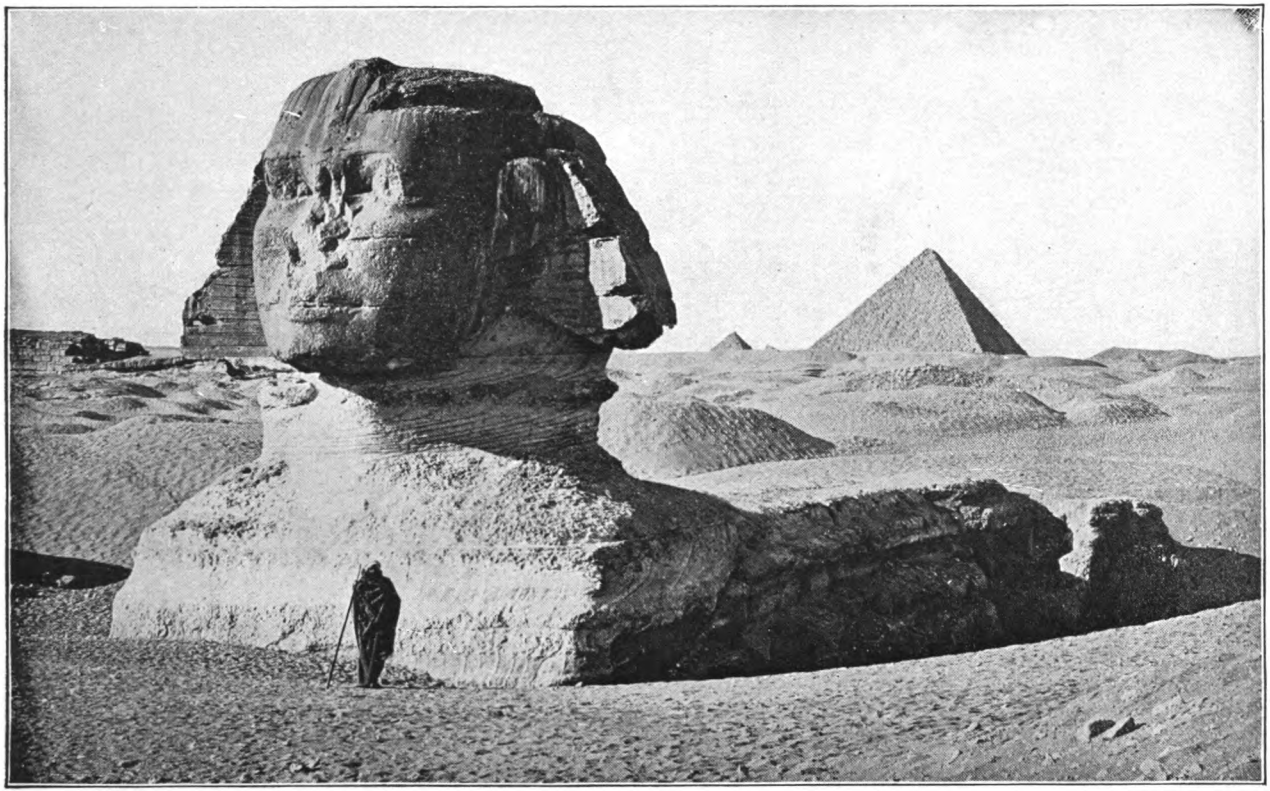
Western Empire, The, a portion of the Roman empire, consisting of Italy, Illyricum, Spain, Gaul, Britain, and Africa, which Valentinian I. reserved for himself, when in 364 he shared the imperial authority with his brother Valens, who reigned in Constantinople as Emperor of the East, and whose territories comprised the E. half of the Balkan Peninsula, Greece, Egypt, Syria, and Asia Minor, as far as Persia. This partition of the Roman empire became final in 395, when Theodosius the Great divided the Roman world between his sons, Honorius, who became Emperor of Rome and the West, and Arcadius, who became Emperor of Constantinople and the East. The Western Empire terminated in 476.

Westfield, a town in Hampden county, Mass.; on the Westfield river and several railroads; 9 miles W. of Springfield; comprises several villages; is the seat of the Western State Normal School; and manufactures steam heaters, cigars, organs, paper, and bicycles. Pop. (1930) 19,775.

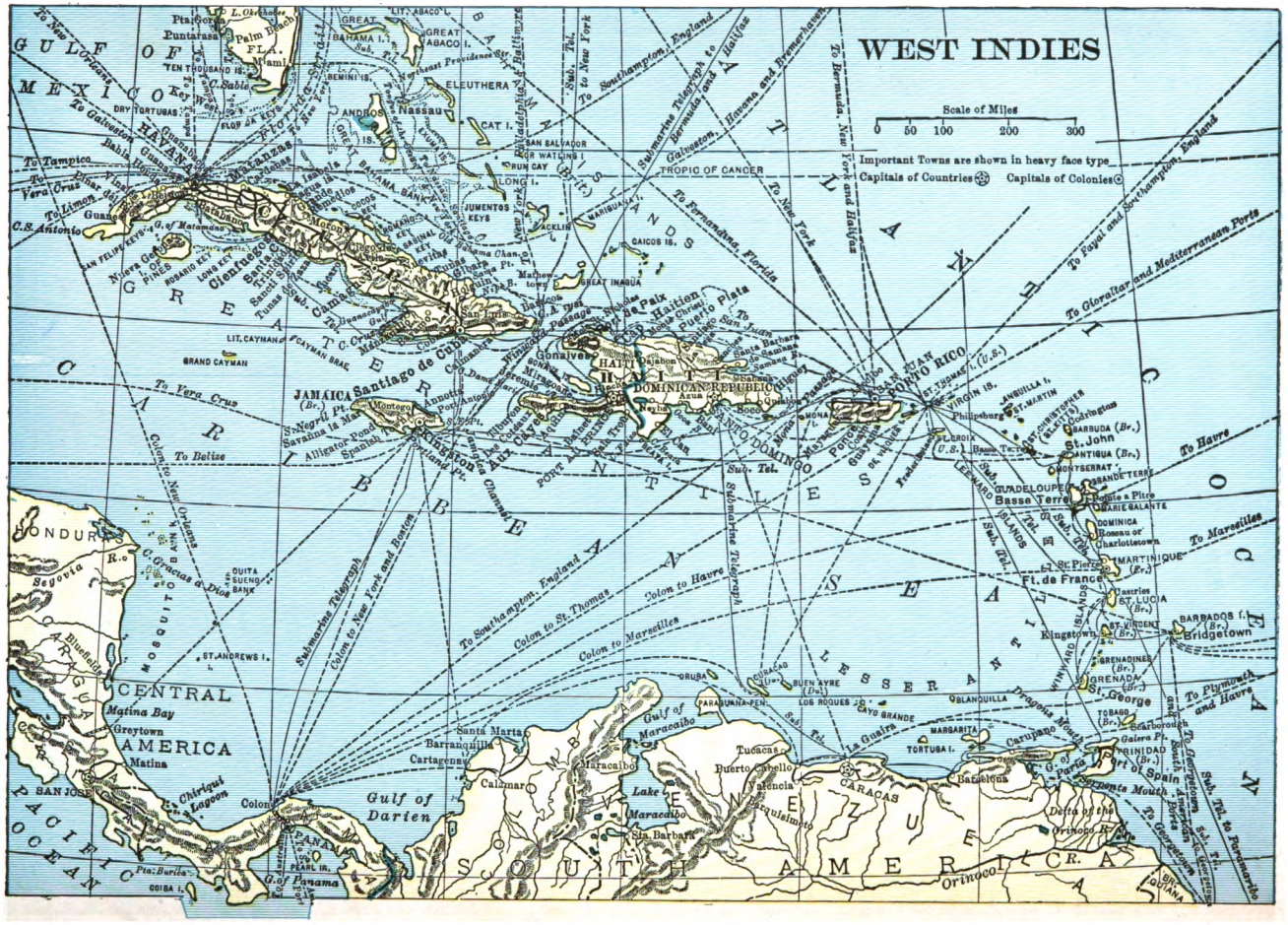
West Flanders, a province of Belgium, bounded on the N. W. by the North Sea and on the W. and S. by France; area, 1,249 square miles; principal cities and towns, Ostend, Bruges, Ypres, and Courtrai; capital, Bruges; pop. (1912) 884,777. The entire region was in the zone of terrific fighting in the World War.

Western Reserve, The, a tract of land in the N. E. of what is now the State of Ohio, once forming part of the claims of Connecticut in the Northwest Territory. When, by the treaty of 1783, Great Britain relinquished the territory S. of the Great Lakes and E. of the Mississippi, disputes arose among the States of Virginia, New York, Massachusetts, and Connecticut as to the right of occupancy in that locality. The difficulty was finally settled by the cession of the whole to the Federal government, but Connecticut reserved a tract of nearly 4,000,000 acres on Lake Erie. The State finally disposed of this in small lots to colonists, and so accumulated a very large school fund.

West Hoboken, a town in Hudson county, N. J.; 2 miles W. of Hoboken and opposite New York city; occupies an elevated site; is the seat of St. Michael's Monastery and a Dominican Convent; and manufactures silk goods, braids, buttons, and brushes. Pop. (1920) 40,074.



THE SPHINX, AND THE PYRAMID OF CHEOPS, NEAR CAIRO, EGYPT


WEST INDIES
Scale of Miles
0 50 100 200 300
Important Towns are shown in heavy face type
Capitals of Countries
Capitals of Colonies
GULF OF MEXICO
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
HAVANA
Nassau
JAMAICA
Kingston
HAITI
DOMINICAN REPUBLIC
PORTO RICO
Ponce
San Juan
CENTRAL AMERICA
HONDURAS
Colon
PANAMA
SOUTH AMERICA
Caracas
Maracaibo
Barranquilla
Cartagena
Trinidad
Port of Spain
Barbados
Bridgetown
Martinique
Fr. de France
Guadeloupe
Basse Terre
Antigua
St. John
Barbuda
Montserrat
Dominica
St. Lucia
St. Vincent
Grenada
St. George
Tobago
Curaçao
Aruba
Margarita
Tortuga
Virgin Is.
St. Thomas
St. Croix
Leeward Islands
Windward Islands
Lesser Antilles
Gulf of Darien
Gulf of Maracaibo
Lake Maracaibo
Orinoco R.
Mosquito Coast
Yucatan
Cuba
Florida
Bahama Is.
Great Bahama I.
Great Abaco I.
Eleuthera
Andros
Cat I.
San Salvador
Long I.
Caicos Is.
Great Inagua
Tropic of Cancer
Gulf Stream
Panama Canal
Colon to New Orleans
Colon to Havre
Colon to Marseilles
Colon to St. Thomas
Colon to New York and Boston
Colon to Belize
Submarine Telegraph
Sub. Tel.
To New York
To Southampton, England
To Havana and Bremerhaven
To Bermuda, New York and Halifax
To Fernandina, Florida
To Egypt and Mediterranean Ports
To Gibraltar and Mediterranean Ports
To Havre
To Marseilles
To Plymouth and Havre
To Tampico
To Vera Cruz
To Belize
To Galveston
To New Orleans
To Limon
To Savanilla
To Pernambuco
To Para
To Demerara
To Georgetown
To Paramaribo

West Indies, or the **Antilles,** an extensive archipelago lying between North and South America, stretching from Florida to the shores of Venezuela. It is divided into the Bahamas, the group stretching from near the coast of Florida in a S. E. direction; the Greater Antilles, comprising the four largest islands of the group, Cuba, Haiti, Porto Rico, and Jamaica; and the Lesser Antilles, stretching like a great bow, with its convexity toward the E., from Porto Rico to Trinidad, near the coast of Venezuela. Almost the whole archipelago lies within the torrid zone. The total area does not exceed 95,000 square miles, of which the Greater Antilles occupy nearly 83,000 square miles. The climate is extremely hot, and the islands abound in tropical productions. Except Haiti, in which there are two republics, Porto Rico and other islands recently acquired by the United States from Spain, and a few islands off the coast of South America, the West Indian Islands are in the possession of European powers. Two-thirds of the inhabitants are negroes. Pop. 5,000,000.

West Indies. Danish, a group of three islands purchased by the United States from Denmark in 1917 for $25,000,000. A treaty ceding them to the United States in 1902, was defeated in the Danish Rigsdag, through influence brought to bear by the islanders themselves, but as the United States needed them for their strategic value to its nearby possessions a new treaty was effected. These islands lie off the E. coast of Porto Rico, and are a mere extension of the marine elevation of which Cuba, Jamaica, Haiti and Porto Rico are the principal representatives, while they also form a connecting link between the Greater and the Lesser Antilles. St. Thomas, the best known of the group, lies 38 miles due E. of the N. E. extremity of Porto Rico; St. John lies 12 miles E. of St. Thomas, while St. Croix lies about 50 miles S. of St. John and St. Thomas, and 60 miles S. E. of the S. E. point of Porto Rico.

The islands are very small, with a comparatively small producing capacity, their chief importance being by reason of the harbors which they offer and their value as a strategic as well as general commercial point. St. Croix, the largest of them, is about 20 miles long and from 1 to 5 miles wide, with an area of about 80 square miles and a population of about 20,000. It is also the most productive of the islands, a considerable area being devoted to the production of sugar cane and tropical fruits. St. John, the smallest of the islands, has an area of about 21 square miles, a population of only about 1,000, and a comparatively small cultivable area, its chief value being in its possibilities for harbor purposes, the natural harbor of Coral Bay being described as one of the best protected natural harbors in the West Indies. St. Thomas, which lies nearest to Porto Rico, is by far the most important in its present availability for harbor purposes, the harbor of St. Thomas having been for more than a century recognized as one of the best, if not the best, natural harbors in the entire West Indies. Nearly the entire population of the island is around the port of St. Thomas (formerly Charlotte Amalie). Population, about 7,700 in 1924. See also VIRGIN ISLANDS.

Westinghouse, George, an American inventor; born in Central Bridge, N. Y., Oct. 6, 1846; removed to Schenectady, where he received a public school education; entered the machine shop of his father; and at the age of 15 designed a rotary engine. He serevd two years in the Union army during the Civil War. His inventions include the Westinghouse air brake, electrical machinery, railroad signals, etc. He died March 12, 1914.

Westlake, William, an American inventor; born in Cornwall, England, in 1831; removed to Milwaukee, Wis., early in life; later learned the tinsmith's trade; was employed by Capt. John Ericsson to make models for his first hot-air engine. Subsequently he entered the employment of the La Crosse and Milwaukee Railroad company. His inventions include the Westlake car heater, the globe lantern, the oil cook stove, the stove board, etc. He died in Brooklyn, N. Y., Dec. 28, 1900.

Westminster Abbey, the coronation church of the sovereigns of England, and one of the chief ornaments

of London. It is a magnificent Gothic pile, situated near the Thames, and adjoining the Houses of Parliament. In 1065 a church was built here in the Norman style by Edward the Confessor. Part of this structure still remains in the pyx house and the S. side of the cloisters; but the main building, as it now stands, was begun in 1220 by Henry III., and was practically completed by Edward I. Various additions, however, were made, down to the time of Henry VII., who built the chapel which bears his name.

The extreme length of the church, including Henry VII.'s chapel, is 531 feet; breadth of transepts, 203 feet; height of roof, 102 feet; height of tower, 225 feet. The coronation ceremony takes place in the choir, where the coronation stone brought by Edward I. from Scotland is situated beside the coronation chairs of the English sovereigns. Westminster Abbey is distinguished as the burial place of a large number of English kings from Edward the Confessor to George II.; the N. transept is occupied chiefly by monuments to warriors and statesmen; while in the S. transept is situated the "Poets' Corner," the burial and memorial place of most of England's great writers from Chaucer to John Ruskin.

Westminster Assembly, an assembly of divines, lay assessors, etc., which met in obedience to an ordinance of the British Parliament, issued June 12, 1543. They sat 1,163 times, their last meeting being on Feb. 22, 1649. On Sept. 15, 1643, commissioners arrived from the Church of Scotland to aid in the deliberations. On April 20, 1643, the Assembly submitted to Parliament a Directory for Public Worship; between Oct. 1 and Nov. 26, 1644, the Confession of Faith, in two portions; on Nov. 5, 1647, the Shorter Catechism; and on Sept. 15, 1648, the Longer Catechism. The Parliament, though accepting and ratifying the productions of the Assembly, did not allow the spiritual independence which the majority of its members earnestly desired to obtain.

Westminster College, a coeducational institution in New Wilmington, Pa.; founded in 1852, under the auspices of the United Presbyterian Church.

Westminster Hall, the hall of the old palace of Westminster, in London; erected by Richard II. (1397–1399) on the foundations of a structure built by William Rufus. The building is closely associated with many stirring events in English history; but it is chiefly remarkable as the place where were held such great state trials as those of the Chancellor More, Lady Jane Grey, the Earl of Stafford, King Charles I., and Warren Hastings.

Westphalia, the name given at different periods to (1) one of the circles of the old German empire, (2) one of Napoleon's kingdoms (1807–1813), conferred on his brother Jerome; and (3) now to a province of Prussia. The latter is bounded by Rhenish Prussia, Holland, Hanover, Brunswick, Hesse, and Nassau. Its area is 7,803 square miles. The surface in the S. and N. E. is generally mountainous; the Northwest spreads out into extensive and often marshy plains, and belongs to the basin of the Ems; the Northeast and a small part of the East to the basin of the Weser; the remainder, constituting the far larger portion of the whole, belongs to the basin of the Rhine, whose chief tributaries are the Ruhr and Lippe. Munster is the capital. Pop. (1919) 4,488,115.

Westphalia, Peace of, the name given to the peace concluded in 1648 at Munster and Osnabruck, by which an end was put to the Thirty Years' War.

West Point, a United States military post in Orange co., N. Y., on the Hudson river, and on the West Shore and the New York, Ontario and Western railroads; 52 miles N. of New York city. It is widely known as the seat of the United States Military Academy. Here are a cemetery where the remains of many distinguished army officers are interred, and the ruins of Fort Putnam. During the Revolutionary War West Point was fortified to control the river, and a heavy chain was stretched across the river to Constitution Island to prevent British warships from ascending the river. In 1777 the place was captured and destroyed by the British,

but new fortifications were built at a cost of $3,000,000. Benedict Arnold was given command of the place Aug. 5, 1780, but escaped on the 25th, after the apprehension of Maj. John Andre, and the discovery of their plot. There are several important monuments in West Point, including the statue of General Sedgwick, the monument of Kosciusko, that of Major Dade, etc. The noted West Point foundry is at Cold Spring on Constitution Island. During 1906–1911 the reservation underwent a striking transformation, both in academic equipment and architectural beauty.

West Virginia, a State in the South Atlantic Division of the North American Union; admitted to the Union, June 20, 1863; capital, Charleston; number of counties, 55; area, 24,170 square miles. Pop. (1920) 1,463,701; (1930) 1,728,510.

The State is hilly and mountainous. The Alleghany Mountains form the Virginia boundary line. A continuation of the Cumberland Mountains of Tennessee crosses the State about 20 miles W. of the Alleghanies. This range embraces the Flat Top, Cotton Hill, Greenbrier, Gauley, and Rich mountains. The surface W. of these mountains gradually descends to the Ohio river, this river forming the principal water system of West Virginia. The chief rivers are the Big Sandy, Kanawha, Guayandotte, and Monongahela, all of which are navigable and enter the Ohio. The Kanawha is fed by the Greenbrier, Gauley, Elk, and Coal rivers. The Potomac river forms part of the N. boundary line. There are numerous waterfalls in these streams all of which afford excellent water power, the falls at Harper's Ferry being especially noted.

Every known variety of coal is mined in the State. West Virginia ranks second in the United States in the output of petroleum. Other important mineral productions are coke, salt, mineral water, natural gas, clay products, sandstone, and limestone.

In 1928 the value of the entire mineral output was valued at $336,637,000. There were produced 132,600,000 long tons of coal, 5,704,000 bbls. of petroleum, 18,700 tons of salt and natural gas, 163,018,000,000 cu. ft. West Virginia ranks eighth in prominence in the mineral output of the United States.

In 1925 there were 90,380 farms valued at $411,159,152. In 1929 the crops were as follows: hay, 1,163,000 tons; corn, 13,892,000 bu.; potatoes, 6,555,000 bu.; apples, 5,600,000 bu.; oats, 5,616,000 bu.; wheat, 1,782,000 bu. Also apples, plums, grapes, and peaches in large quantities.

In 1929 all farm livestock was estimated as: sheep, 605,000; cattle, 520,000; milch cows, 226,000; swine, 173,000; horses, 122,000; mules, 14,000.

The manufacturing industry was represented in 1927 as follows: There were 1,313 manufacturing plants employing 77,630 wage earners, paying $103,431,000 for wages and $252,884,000 for raw materials and yielding products having a combined value of $455,217,000.

In 1929 there were 115 National Banks with resources totaling $2,051,000,000, demand deposits, $70,897,000 and time deposits, $73,908,000.

In 1927-28 there were 409,450 pupils enrolled in public elementary schools under 14,485 teachers. For higher education there were 271 public high schools with 2,323 teachers and 51,802 students besides Bethany College (Disciples); West Virginia University (State), Morgantown; West Virginia Wesleyan College (M. E.), Buckhannon; and Davis and Elkins College (Presb.), Elkins, all co-educational; and for negroes, the State Colored Institute, Institute Station, and Storer College (Bapt.) Harper's Ferry.

In 1928 the state's revenue was $94,308,769 and the expenditure $88,989,495, the State debt $56,499,000. The assessed value of all real property was $1,225,178,580, and of personal property $378, 198, 230.

The judicial power in West Virginia is vested in a Supreme Court of Appeals, Circuit Courts and inferior courts established as needed by the Legislature. Five judges sit in the

Supreme Court of Appeals and they are elected for a term of 12 years. This court sits three times annually: at Wheeling, Charleston and Charles Town, respectively. The Circuit Court consists of 19 judges elected for eight years and the state is divided into 18 circuits for judicial purposes. The Legislature establishes inferior courts in some counties to relieve the Circuit Courts and there are one or more justices of the peace in each magisterial district.

The governor is elected for a term of four years and receives a salary of $10,000 per annum. Legislative sessions are held biennially in odd years, beginning on the second Wednesday in January, and are limited in length to 45 days each. The Legislature in 1926 had 30 members in the Senate and 94 in the House, each of which receives an annual salary of $500. There are six Representatives in Congress under the 1920 apportionment.

The history of the State prior to 1861 is identified with that of Virginia proper, of which State it formed part till after the outbreak of the Civil War. The Alleghany Mountains, however, formed a natural line of demarkation between the two sections of the original State, and conditions favoring separation had long existed. These reached a climax on the passage by Virginia of an ordinance of secession, the popular vote in the section W. of the mountains being strongly opposed to it. A convention of loyalists met at Wheeling in June, 1861, and in August adopted an ordinance providing for the formation of a new State to be called Kanawha. In November a constitution was adopted and the name West Virginia chosen. This constitution was adopted by the people by a very large majority in April, 1862, and the State was formally admitted to the Union by Act of Congress and the approval of President Lincoln, June 20, 1863.

West Virginia University, a coeducational, nonsectarian institution in Morgantown, W. Va.; founded in 1867.

Wetteren, a town of Belgium, Province of East Flanders, on the Scheldt river, 7 miles E. S. E. of Ghent, 9 miles W. of Termonde. With the regeneration of Waasland, in which the town is situated, Wetteren has kept pace, and is especially noted for its manufactures of silks, fabrics and laces.

Whale, a name that may be taken as equivalent to Cetacean, and applied to any member of that order of mammals, which includes two great sets: the toothed whales, such as sperm whale and dolphin, and the whalebone whales, such as right whale and rorqual, in which the teeth are only embryonic. The order Cetacea is usually divided into three sub-orders: (1) the Mystacoceti or Balænoidea, baleen or whalebone whales; (2) the Odontoceti or Delphinoidea, toothed whales; and (3) the Archæoceti or extinct Zeuglodonts. The differences between the extant sub-orders are so great that any idea of the close relationship must be abandoned; indeed it is doubtful whether our classification might not be brought nearer the truth by recognizing two distinct orders. Less specialized than the modern types are the extinct Zeuglodonts of the Eocene period, but it is by no means certain that they should be included within the order Cetacea. See also CACHALOT.

Whaleback, the name of a form of steam vessel invented by Capt. Alexander McDougall, of West Superior, Wis., in 1874. In 1888 the first whaleback barge was built of 437 tons registry and 1,400 tons capacity. Her cost was $45,000 and in two years she netted nearly twice that amount for her owners. The name whaleback was suggested by the resemblance of the visible portions of the vessel, when afloat, to the back of a whale. A whaleback crossed the Atlantic in 1891. At the World's Fair in Chicago (1893), the "Christopher Columbus," a vessel of this type, with a passenger capacity of 5,000, ran between the city and the Fair.

Whalebone, a horny substance, occurring in long, thin plates, fringed at the edges, and acting as a strainer to detain the whale's food when the animal ejects the water which it has swallowed with the medusæ and small fry which constitute its food. The principal source of whalebone is the "right whale," so called, the Balæna mysticetus or australis. Some 300 of

the plates are found in the mouth of an adult whale, and vary from 10 to 15 feet in length. Being very flexible, strong, elastic, and light, whalebone is employed for many purposes.

Wharton, Anne Hollingsworth, an American story-writer; born in Southampton Furnace, Pa., Dec. 15, 1845. Among her books are: "The Wharton Family"; "Heirlooms in Miniature," etc.

Wharton, Mrs Edith (Jones), an American author; born in New York in 1862; married Edward Wharton, of Boston, in 1885. She wrote: "The Greater Inclination"; "The Valley of Decision"; etc.

Wharton, Francis, an American jurist; born in Philadelphia, Pa., March 7, 1820; was graduated at Yale College in 1839, and admitted to the bar in 1843. From 1856 to 1863 he was Professor of Logic and Rhetoric in Kenyon College, O.; in 1863 was ordained in the Protestant Episcopal Church and became rector of St. Paul's in Brookline, Mass., and in 1866 became a professor in the Episcopal Divinity School at Cambridge, Mass. He also held the chair of international law in the Boston Law School. In 1885 he was appointed solicitor for the State Department. Under a resolution of Congress (1888) he was made editor of the Revolutionary diplomatic correspondence of the United States. He wrote extensively on legal and theological subjects. Died in Washington, D. C., Feb. 21, 1889.

Whately, Richard, archbishop of Dublin and scholar; born in 1787; died in 1863. He did much for national education in Ireland, and was the author of "Elements of Rhetoric;" "Elements of Logic;" and other works.

What-Cheer, the watchword or shibboleth of the people of Rhode Island. It is derived from the fact that the Indians of that State thus greeted the founder of the colony, Roger Williams, as he and his companions landed from a canoe on Seekonk river, near the site of the city of Providence.

Wheat, the most valuable and, next to maize or Indian corn, the most productive of all the cereal grasses. The native country of the cultivated wheat has generally been supposed to be the central part of Asia; but the Ægilops ovata, a grass of the regions near the Mediterranean, and of Western Asia, becomes transformed by cultivation into wheat and may be regarded as the original form. Wheat is now the breadstuff of 12 European nations, and is extensively used in North America and to a considerable extent in India. It was no doubt widely grown in the prehistoric world. The Chinese cultivated it 2700 B. C. as a direct gift from heaven; the Egyptians attributed its origin to Isis, and the Greeks to Ceres. Ancient monuments show that the cultivation of wheat had been established in Egypt before the invasion of the shepherd kings, and there is evidence that more productive varieties of wheat have taken the place of one at least of the ancient sorts. Innumerable varieties exist. Many parts of the United States and British provinces and wide regions of South America are admirably adapted to its cultivation. Wheat of the finest quality is also produced in Australia. The value of wheat depends mainly on the quantity of fine flour which it yields; the best wheat yielding 76 to 80 per cent., sometimes even 86 per cent., of fine flour. The greater part of the husk of wheat is separated from the flour by the miller, and is known as bran. That portion of the bran which is more finely divided than the rest receives the name of sharps or pollards.

The first wheat in the United States was planted in New England in 1602, and nine years later in Virginia, which was also the birthplace of Indian corn as we know it. In the period that has elapsed since that time, the wheat fields of this country have expanded, till the yield in the most productive of recent years, 1915, reached the vast quantity of 1,025,801,000 bushels, valued at $942,303,000. The great importance of this crop was attested by the fact that the production in all the wheat-growing countries of the world aggregated 4,094,480,000 bushels, making the output of the United States 25 per cent. of that of the world. Analyzing the world's total, it is found that North America produced 1,406,105,000 bushels; South America, 191,066,000; all

Europe, 1,808,802,000; Asia, 564,075,000; Africa, 91,901,000; and Australasia, 112,159,000. The most productive regions, beyond the United States, were: European Russia, 653,206,000; British India, 376,731,000; Canada, 376,304,000; France, 225,132,000; Italy, 170,541,000; Argentina, 168,468,000; Hungary proper, 152,934,000; Germany, 141,676,000; Spain, 139,298,000; and the United Kingdom, 76,143,000. The output of the United States comprised 673,947,000 bushels of winter wheat, and 351,854,000 bushels of spring wheat.

Wheat Fly, a yellow and orange-colored two-winged fly, about a tenth of an inch long, with black eyes, the female of which deposits her eggs in the heart of the wheat blossom.

Wheat Moth, of the family Tineidæ; lays from 60 to 90 eggs in clusters of about 20 on a single kernel of grain. In 4 to 6 days these eggs produce little worm-like caterpillars not thicker than a hair. Each burrows in a single kernel, and devours the mealy substance, and the work of destruction goes on so unseen that it is only detected by the softness of the grain or the loss of its weight. When fully grown, the Angoumois caterpillar is not more than one-fifth of an inch long, white, with brownish head, six small jointed legs, and 10 extremely small prop legs. It goes into the chrysalis state within the kernel.

Wheaton, Frank, an American military officer; born in Providence, R. I., May 8, 1833; was graduated at Brown University; entered the army as lieutenant in the 1st United States Cavalry in 1855, and until the outbreak of the Civil War was chiefly engaged in campaigns against the Indians; was promoted captain in March, 1861, and colonel, July 21, 1861; and was appointed a Brigadier-General of volunteers in November, 1862. He served with the Army of the Potomac throughout the Civil War; was promoted Brigadier-General, U. S. A., in April, 1892, and Major-General in April, 1897; and retired May 8, following. Died 1903.

Wheaton, Henry, an American jurist; born in Providence, R. I., Nov. 27, 1785; was graduated at Brown University, 1802; practised law in New York, 1812, and edited the "National Advocate." He was a reporter of the United States Supreme Court in 1816–1827, and then became charge d'affaires to Denmark (1827–1835), and in 1835–1846 minister to Berlin. He died in Dorchester, Mass., March 11, 1848.

Wheaton, Loyd, an American military officer; born in Michigan, July 15, 1838; served through the Civil War; won distinction in the battle of Shiloh and in other important actions; and became colonel of the 8th Illinois Volunteers. On July 1, 1866, he was appointed captain in the 34th United States Infantry; Sept. 11, 1895, was commissioned colonel of the 7th Infantry; and in July, 1898, was appointed a Brigadier-General of volunteers. During the Spanish-American War he commanded the 1st Brigade, 1st Division of the 7th Army Corps. In January, 1899, he was assigned to duty with the 20th Infantry in the Philippines; in 1901 was promoted Major-General, U. S. A.; and in 1902 was retired. D., 1918.

Wheaton College, a coeducational institution in Wheaton, Ill.; founded in 1860 under the auspices of the Congregational Church.

Wheat Starch, the starch or flour of wheat, frequently used in the adulteration of mustard, pepper, etc.

Wheel, a circular frame or solid disk turning on an axis. The essential feature of a wheel is rotation, partial or entire. Its motion may be intermittent, oscillatory, or continuous. Its form may be circular or otherwise; its contour regular or irregular. Its functions may be to transmit motion or to modify it. Its application may necessitate cogs of a given form, or it may be smooth, its surface being free from contact with other portions of the machine. It may be hollow, for the conveyance or measurement of fluids; or it may be the means of propulsion of fluids; or conversely it may be propelled by them. It may form a support, and, by rotation, be made effective in assisting transportation. Wheels receive different names according to the purpose for which they are used; as, balance wheel, cog

wheel, crown wheel, fly wheel, paddle wheel, pinion wheel, scape wheel, tread wheel, turbine, etc.

Wheel, The, an agricultural league or guild, of the United States, similar in scope and aim to the Granger movement in the West and Northwest, but whose ramifications extended throughout the Southwest. The first Wheel was founded in Prairie co., Ark., in 1880, and for some years the order increased rapidly in strength and influence among the agricultural class.

Wheeler, Andrew Carpenter ("Nym Crinkle"), an American journalist; born in New York, June 4, 1835. He was connected with the New York "Times" and "World," Milwaukee "Sentinel," etc., and was a most able theatrical critic and general writer. Died 1903.

Wheeler, Benjamin Ide, an American educator; born in Randolph, Mass., July 15, 1854; was graduated at Brown University in 1875; became Professor of Philology at Cornell University in 1886 and of Greek in 1888; accepted the similar chair in the American School of Classical Studies at Athens, Greece, in 1896; and was elected president of the University of California in July, 1899.

Wheeler, Crosby Howard, an American missionary; born in Hampden, Me., Sept. 8, 1823; was graduated at Bowdoin College in 1847; and at Bangor Theological Seminary in 1851; went to Smyrna as a missionary in 1857. He was the founder and first president of Euphrates College in Harpoot. In 1896 his house was destroyed during the Armenian massacres in Harpoot and he was compelled to leave the city and return to the United States. He died in Auburndale, Mass., Oct. 11, 1896.

Wheeler, Joseph, an American military officer; born in Augusta, Ga., Sept. 10, 1836; was graduated at the United States Military Academy in 1859; served in the cavalry till the outbreak of the Civil War, when he entered the Confederate army, in which he was commissioned Major-General and senior commander of cavalry. He won great distinction during the Civil War as a raider. After the war he entered the law profession; held a seat in Congress in 1881–1899; and was made Major-General of volunteers in May, 1898. During the Santiago campaign in Cuba he commanded the Cavalry Division; participated in the battles of Las Guasimas and San Juan Hill; was appointed senior member of the commission to make arrangements for the surrender of the Spanish army; served in the Philippines as commander of the 1st Brigade, 2d Division, from August, 1899, to January, 1900; was appointed a Brigadier-General, U. S. A., June 16, 1900, and was retired on Sept. 10, following. He died Jan. 25, 1906.

Wheeler, Nathaniel, an American inventor; born in Watertown, Conn., Sept. 7, 1820; early engaged in the manufacture of carriages, but about 1848 joined Allan B. Wilson in manufacturing sewing machines. In 1852, on the establishment of the Wheeler & Wilson Manufacturing Company, he became its president, and by his practical knowledge of machinery and ability as an organizer soon built up the largest sewing machine factory in the world. Subsequently he served for six sessions in the Senate and House of the Connecticut legislature; invented and patented various improvements in sewing machines, railway cars, heating and ventilating apparatus, and wood finishing processes. He died in Bridgeport, Conn., Dec. 31, 1893.

Wheeler, William Adolphus, an American lexicographer; born in Leicester, Mass., Nov. 14, 1833. He was assistant superintendent of the Boston Public Library in 1867. Besides assisting in the composition of "Worcester's Dictionary" and of the new illustrated edition of "Webster's Dictionary" (1864), he wrote "Dictionary of the Noted Names of Fiction" (1865); "Who Wrote It?" an index to anonymous literature, left unfinished by him, but completed by Charles G. Wheeler. He died in Roxbury, Mass., Oct. 28, 1874.

Wheeler, William Almon, an American statesman; born in Malone, N. Y., June 30, 1819. He was admitted to the bar in 1845; in 1857 he became a banker and was also connected with the management of railroads. He was a member and presi-

dent pro tem. of the State Senate, 1858–1859; and was elected to Congress in 1860, serving only one term; was president of the State Constitutional Convention in 1867; served in Congress from 1869–1877; was chairman of the committee on the Pacific railroad company. He was the first member of Congress to return his "back pay." He settled the Louisiana difficulties by the bill called the "Wheeler Compromise." In 1876 he was nominated for Vice-President by the Republican party and was elected. He died in Malone, June 4, 1887.

Wheeling, a city and capital of Ohio co., W. Va.; on the Ohio river and a narrow alluvial plain, overlooked by precipitous hills; 63 miles S. W. of Pittsburg, Pa. It occupies an elevation of about 640 feet above sea-level, and is the largest and most important place on the Ohio river between Pittsburg and Cincinnati. The old National Road crosses the river at Zane's Island, opposite the city, by a suspension bridge with a span of 1,010 feet. Wheeling is in an extensive coal region, and is an important iron and steel manufacturing center. The U. S. census on Manufactures in 1914 credited the city with 137 industrial plants, employing 7,856 wage earners, paying $42,096,927 for raw materials, and yielding products of a combined value of $63,369,861. Pop. (1930) 61,659.

Wheelwright, John, an English-American clergyman, classmate of Oliver Cromwell at Cambridge University; born in Lancashire, England, about 1592; was suspended for nonconformity and came to Massachusetts in 1636. A brother-in-law of Anne Hutchinson, and defender of her religious opinions, he was banished from Massachusetts for seditious preaching, and founded Exeter on the Squamscott. He died in Salisbury, N. H., Nov. 15, 1679.

Wheelwright, John Tyler, an American author; born in Roxbury, Mass., Feb. 26, 1856; was graduated at Harvard College in 1876; admitted to the bar in 1879; filled various public offices. He wrote "New Chance Acquaintance"; "A Bad Penny"; etc.

Whelk, a popular name for a number of marine gasteropods, and especially applied to species of Buccinum common on the coasts of Northern seas. The well-known common whelk is often dredged for bait or as food for the poor. It occurs from low water to a depth of about 140 fathoms, and burrows in the sand for bivalves, on which it feeds.

Wherry, a light, shallow boat, seated for passengers, and plying on rivers; also a light, half-decked fishing vessel, used in different parts of Great Britain and Ireland.

Wherry, William M., an American military officer; born in St. Louis, Mo., Sept. 13, 1836; was educated at the University of Missouri and studied law; served through the Civil War; was aide to Gen. John M. Schofield in 1862–1866. He afterward served on frontier duty and won distinction in actions against the Indians. When the war with Spain began he accompanied the army of invasion to Cuba and took part in the battle of San Juan Hill, and in the capture of Santiago. He was promoted Brigadier-General, U. S. A., Jan. 7, 1899, and was retired the same month.

Whetstone, a piece of stone, usually a rectangular slab, used for sharpening cutlery or tools.

Whey, the portion of milk which separates as a thin, greenish, clouded liquid, when by the addition of rennet, as in cheese-making, or other acid substance, the milk curdles and the casein portion takes the form of curd. The whey carries with it the greater part of the milk sugar and some portion of nitrogenous matter in the form of albumen and lacto-protein.

Whig, in English history, a term applied to the members of one of the great political parties in Great Britain. Originally it was a Scotch term, and appears to have been first used in Scotland in the reign of Charles I.

From Scotland the term was transferred to England, and was applied to the political party opposed to the Tories. It was first assumed as a party name by those who were chiefly instrumental in placing William III. on the throne. As a political term it has now almost fallen out of use, being superseded by the term Liberal.

In United States history, the name whig was first applied to the supporters of the cause of the colonies against the English king in the Revolutionary War. The name was doubtless applied to the opponents of the king, from the fact that in England the same name was applied to the opposers of the royal prerogative in the time of James II., who were ultimately successful in unseating that monarch. After the Revolution the name Whig disappeared from politics, and the people of the country divided into Federalists and Democrats. The party platform of both parties, being gradually altered to meet existing exigencies, the name Federalist was dropped and the term Whig again resuscitated and applied to the opponents of the Democratic party. This name was retained till the agitation of the slavery question induced the formation of a new party, advocating the abolition of slavery and composed of recruits from the ranks of both the Democratic and Whig parties. To this new party the name Republican was applied, and after its formation the name Whig disappeared from American politics.

Whipper-in, in fox hunting, one who keeps the hounds from wandering, and whips them in, if necessary, to the line of scent. In politics, one who enforces party discipline among the supporters of the government or opposition, and urges their attendance.

Whipple, Henry Benjamin, late P. E. Bishop of Minnesota; born in Adams, N. Y., April 15, 1823; died in 1901. Ordained deacon in 1849 and priest in 1850, he soon became well known by his earnestness, devotion and ability as a Christian minister. His work for the evangelization of the Indians and the elevation of the negroes in the South gained for him universal esteem. The Indians called him "Straight Tongue." He became bishop of Minnesota in 1859, and held that place until his death.

Whippoorwill, in ornithology, a bird common in the E. parts of the United States; about 10 inches long; plumage tawny brown, much mottled and indistinctly marked with small transverse bands. The popular name of the bird is derived from the cry, which bears some resemblance to these words.

Whip Snake. They may be readily distinguished by their excessively slender back and tail, which has been compared to the thong of a whip, and long and narrow head, which ends in a protruding rostral shield or in a flexible snout. They are arboreal in habit, usually green in color, and feed on birds and lizards.

Whirlpool, a spot in a river or in the sea in which through obstructions to flowing water, produced by banks, islands, rocks, or by winds and currents, a rotatory motion is imparted to the moving fluid. Revolutions of such a nature on a minute scale, may be seen on nearly every streamlet; but the term whirlpool is used almost exclusively of the same phenomenon on a large scale. There is a tendency to vortical motion below most waterfalls.

Whirligig, or **Whirlgig Beetle,** a beetle which abounds in fresh water in the United States, and may be seen circling round on the surface with great rapidity. Its eyes are divided by a narrow band, so that, though it has only two, it is made to look as if it had four.

Whirlwind, a violent wind moving spirally, as if revolving around an axis, which has at the same time progressive motion. Whirlwinds are produced by two currents of air proceeding in different directions, and the course of the whirlwind is determined by the stronger of the two currents.

Whiskey, an ardent spirit, distilled generally from barley, but sometimes also from wheat, rye, sugar, molasses, etc. There are two varieties — viz., malt whiskey and grain whiskey. The former is of preferred quality, and made principally from malted barley, and sometimes, though rarely, from rye. The latter is cheaper but stronger, and is made from various substances, as sugar, molasses, potatoes, but principally from unmalted grain, as Indian corn, barley, etc., dried and ground up. If kept sufficiently long, it is said to be equal in quality to malt whiskey.

Whiskey Insurrection, the name given to a local outbreak occurring in opposition to the excise law passed by Congress, March 3, 1791. In ad-

dition to the general objections urged against the measure, the inhabitants of Western Pennsylvania considered the tax an unfair discrimination against their region and raised an insurrection, causing President Washington to call out an army of 15,000 militia. This show of an unsuspected vigor and resource on the part of the government forced the insurgents to disperse without bloodshed.

Whispering Gallery, or **Whispering Dome,** a gallery or dome of an elliptical or circular form, in which faint sounds conveyed around the interior wall may be readily heard, while the same are inaudible elsewhere in the interior.

Whist, a game of cards, so called from the silence necessary to play it attentively and correctly. It was formerly also called whisk. It is played by 4 persons. Popular variations of the original game are Bridge and Duplicate Whist.

Whistler, James Abbot McNeill, an American painter; born in Lowell, Mass., in 1834; studied for a time at the United States Military Academy; went to Paris, and afterward settled in London. In 1884 he became a member of the Society of British Artists. In 1859 he began to exhibit in the Royal Academy. He exhibited frequently in the Salon, the Academy, the Grosvenor Gallery, the Society of British Artists, and in 1874 and 1892 held exhibitions of his paintings in London. The finest of his oil pictures are "The Artist's Mother — an arrangement in Black and Gray," shown in the Royal Academy of 1872, awarded a gold medal in the Salon of 1884, and purchased for the Luxembourg Gallery in 1891; the "Portrait of Thomas Carlyle," shown in the artist's exhibition of 1874, and purchased by the Glasgow Corporation in 1891; and the "Portrait of Miss Alexander — Harmony in Gray and Green." Whistler's art is original and individual. On Feb. 11, 1902, the Philadelphia Academy of Fine Arts awarded him its Gold Medal of Honor. Died 1903.

Whitaker, Alexander, an American clergyman; born in England, in 1588. He baptized Pocahontas, and officiated at her wedding. He wrote "Good Newes from Virginia," one of the first books written in the colonies. Died in Virginia after 1613.

White, Andrew Dickson, an American diplomatist; born in Homer, N. Y., Nov. 2, 1832. He was graduated at Yale in 1853; travelled in Europe; attache to legation of the United States, St. Petersburg, 1854–1855; studied in the University of Berlin; Professor of History and English Literature, University of Michigan, 1857–1863; returned to Syracuse and elected State Senator, (1863–1867); chosen first president of Cornell University, 1866; has in addition to the presidency filled the chair of modern history; was appointed by President Grant, commissioner to Santo Domingo to study and report on question of annexation, 1871; by President Hayes minister to Berlin, 1879–1881; by President Harrison minister to St. Petersburg, and continued under President Cleveland, 1892–1894; appointed member of the Venezuelan Commission, 1895–1896; ambassador to Berlin under President McKinley, 1897, resigned Aug. 5, 1902; president of the American delegation to the International Peace Congress in 1899. Died, 1918.

White, Edward Douglass, an American jurist; born in the parish of Lafourche, La., Nov. 3, 1845; was educated at Mount St. Mary's College, Md., and at the Jesuit College in New Orleans. During the Civil War he served in the Confederate army. After the war he practised law. He was State Senator of Louisiana in 1874; associate justice of the Supreme Court of Louisiana in 1878; United States Senator in 1889–1894; associate justice of the United States Supreme Court in 1894-1910; **Chief** Justice, 1910. Died, 1921.

White, Eliza Orne, an American author; born in Keene, N. H., Aug. 2, 1856; was educated under public and private tutors and devoted herself to literature.

White, Greenough, an American educator; born in Massachusetts in 1863; became an Episcopal clergyman. He was Professor of Literature and of Ecclesiastical History at the University of the South, Sewanee, Tenn., 1885–1894. Died 1901.

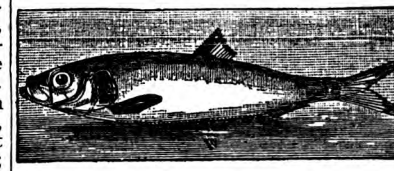
White, Henry, diplomat, born in Baltimore, Md., Mar. 29, 1850. He received a private education in the United States and France; served with unobtrusive success in diplomatic positions in Vienna, 1883–4, London, 1884–93, and again after 1897; was the United States representative in the International Conference on Moroccan affairs at Algeciras in 1906; and was Ambassador to Italy in 1905–1907, and to France in 1907–1909.

White, Horace, an American editor; born in Colebrook, N. H., Aug. 10, 1834. He settled in Chicago, was editor of the Chicago "Tribune" (1864–1874); and editor-in-chief of the New York "Evening Post" in 1883–1903. He wrote many pamphlets and essays on political, social, and financial topics.

White, Richard Grant, an American Shakespearean scholar; born in New York city, May 22, 1822. His journalistic work was in connection with the New York "Courier and Enquirer" (1851–1858), and "World" (1860–1861); and the London "Spectator" (1863–1867), for which he wrote "Yankee Letters." Among his published books are: "Memoirs of the Life of William Shakespeare, with an Essay towards the Expression of His Genius," etc., "Words and their Uses," "The Riverside Shakespeare," with biography, introductions and notes; an annotated edition of Shakespeare, etc. He died in New York city, April 8, 1885.

White, William, an American clergyman; born in Philadelphia, Pa., April 4, 1748. He was graduated at the College of Philadelphia in 1765; completed his theological studies in 1770; and went to England to obtain holy orders. The degree of D. D., the first honorary degree of the University of Pennsylvania, was conferred on him in 1782. During the Revolutionary War, Dr. White sided zealously with the colonies. In 1786 he was elected bishop, being consecrated in Lambeth palace, England, in 1787. He lived to see the Church in the States thoroughly organized, consecrating 11 bishops. He died in Philadelphia, July 17, 1836.

White Ants, in entomology, a popular name for any of the Termitidæ. But they belong to different orders, the venation of the wings being different. A white ant looks not unlike a soft immature earwig, but without the forceps. They constitute the most destructive insect pests to be found in the tropics. They do not attack human beings, their ravages being confined to property. They make their way into houses through some minute aperture which they have formed in the floor or in the wall. Up to the moment of emergence they give no indication of their existence, and when they come forth, which they do in thousands, they take every means in their power to shun observation, while busily engaged in destructive work. Nothing external may reveal the fact that the joists or rafters on which they have been operating are weakened and rendered unsafe by being all pierced internally with their galleries. If they can effect an entrance into a library they bring up mud and construct tunnels with it so as to glue one book to another, and eat away the leather or cloth by which the boards were affixed to the book itself, besides rounding off the angles of a number of the volumes. Every historical document in tropical regions is in danger from these destructive creatures.



WHITEBAIT.

Whitebait, the name by which the fry of the herring, and sprat are known in the market, and when served for the table.

Whiteboys, the name of an illegal association formed in Ireland about 1760. The association consisted of starving day laborers, evicted farmers, and others in a like condition, who used to assemble at night to destroy the property of harsh landlords or their agents, the Protestant clergy, the tithe collectors, or any others

that had made themselves obnoxious in the locality.

White Brethren, in Church history, a body of enthusiasts who appeared in Italy at the beginning of the 14th century, and, under the leadership of a priest claiming to be Elias, declared a crusade against the Turks in order to obtain possession of the Holy Land. They were met at Viterbo by the papal troops, and were dispersed. Their leader was carried to Rome, where he was burnt as a heretic in 1403.

White-candlewood, a large tree with pinnate leaves and bunches of purple pear-shaped fruits. The juice of the tree is as black as ink; its wood has a pleasant smell and takes a fine polish. It grows in the Carolinas.

White Caps, lawless bands in Southern Indiana, who, from 1880, undertook the regulation of the manners and morals of that section. They met in secret places, wore regalia which they donned in the woods, rode by night, attempted to regulate the people with whom they lived, and held their hands against society and law. These regulators of the morals of their neighborhoods dressed differently in different parts of the country which they terrorized. Where they were regularly organized and did the most mischief, around English and Marengo, they had nearly a full uniform, a complete regalia. They wore white paper foolscaps, with paper masks, and coats of coffee sacking. To make the coats they merely cut arm or sleeve holes in the sides of coffee sacks close to the bottoms and holes in the bottoms to put their heads through. The whole White Cap movement was borrowed from English outlawry.

Whitechapel, a celebrated parish of London, England, where the mysterious "Jack the Ripper" operated in 1888–1891. It contains the Tower of London.

White City, a popular name given to the grounds on which the World's Columbian Exposition was held, because white was the predominating color of the exterior of the buildings.

White Clover, a perennial creeping plant, sometimes a foot and a half high, the leaflets obovate or obcordate, toothed, sometimes with a semilunar band at the base; flowers white or somewhat roseate.

White Colors. The principal white pigment, and the most important of all painters' colors, is white lead. Zinc white or Chinese white is a hydrated oxide of zinc, and pearl white is yielded by the nitrate of bismuth. A fine chalk yields Spanish white, and whiting is ground chalk.

White Cross, an organization similar in many respects to the famous Red Cross, from which it differs chiefly in the fact that it is distinctly American. It was founded in 1898 by Mrs. Jane Creighton, of Portland, Or., who became its first president. Its emblem is designed to represent the cross bandages of white on the blood-red field of war, encircled by the blue of the firmament, comprising the triple color of the Union. The motto of the organization is "Truth, Charity and Philanthropy," and its purposes include not only the caring for wounded and sick American soldiers and sailors, but the aiding of the widows and orphans of those who are killed in battle or die of disease or accident. The organization is self-supporting, and all it asks of the National government is recognition and protection.

White Cross Society, a society instituted in or about 1883, at Bishop-Auckland, England, to urge on men the obligation of personal purity; to raise the tone of public opinion on questions of morality; and to inculcate a respect for womanhood.

White Elephant, an elephant affected with albinism. Such animals appear to have been known to the ancients. They are highly esteemed by some Eastern potentates, and are considered sacred in Siam. A specimen purchased by the late P. T. Barnum from King Theebaw of Burma was brought to the United States in 1884. It is generally reported that when the King of Siam desires to ruin any one, he makes him a present of a white elephant. The sacred elephant has an enormous appetite, and, being sacred, it is a crime to let it die, so that the gift generally entails ruin on the recipient.

White Feather, the symbol of cowardice, a term introduced in the days when cock fighting was in vogue. As a thoroughbred game cock has no white feathers, a white feather was a proof that the bird was not game.

Whitefield, George, an English clergyman; born in Gloucester, England, Dec. 16, 1714. At the age of 18 he entered as servitor at Pembroke College, Oxford, where he became acquainted with the Wesleys, and joined the small society which procured them the name of Methodists. He was ordained deacon in 1736, and soon became very popular as a preacher. In 1738 he went to the American settlement of Georgia, where his ministrations gave great satisfaction to the colonists. In the following year he returned to England to procure subscriptions for building an orphan house in the settlement. Having taken priest's orders, he repaired to London, where the churches in which he preached proved incapable of holding the crowds who assembled to hear him. He now adopted preaching in the open air, and visited various parts of the country, addressing vast audiences. In 1739 he again embarked for America, and made a tour through several of the provinces, preaching with great effect to immense crowds. He returned to England in the following year, where for a time differences between him and Wesley deprived him of many followers. After visiting many parts of England, Scotland, and Wales he again returned to America, and remained there nearly four years. Soon after his return he was introduced to the Countess of Huntingdon, who made him one of her chaplains. A visit to Ireland and two more voyages to America followed, and for several years his labors were unremitting. He was the founder of the Calvinistic Methodists. At length, on his seventh visit to America, he died in Newburyport, Mass., Sept. 30, 1770.

White Hats, The, in Flanders, in the 14th century, the badge of the democratic party, led by Jacob van Artevelde, the great brewer of Ghent, who was elected their captain in 1338, and was assassinated in 1345.

Whitehead, Cortlandt, an American clergyman; born in New York city, Oct. 30, 1842; was graduated at the Philadelphia Divinity School in 1867; ordained deacon in the Protestant Episcopal Church in 1867, and priest in 1868; missionary in Colorado, 1867–70; rector of the Church of the Nativity, South Bethlehem, Pa., 1870–82; consecrated bishop of Pittsburg, Jan. 25, 1882.

White House, a name applied to the Presidential mansion in Washington, D. C. The name arose from the fact that it is built of stone and painted white. The corner stone was laid in 1792; the house was first occupied by President Adams in 1800; burned by British troops in 1814; and restored in 1818. In 1902 and 1909 the building was enlarged by one-story wings to accommodate the immediate Presidential offices. By metonymy the name has been applied to the office of the Presidency itself.

White Lady, a spectral figure which, according to popular legend, appears in many of the castles of Germany and elsewhere, by night as well as by day, particularly when the death of any member of the family is imminent. She is regarded as the ancestress of the race, shows herself always in snow-white garments, carries a bunch of keys at her side, and sometimes rocks and watches over the children at night when their nurses sleep. The earliest historical instance of this apparition occurred in the 15th century, and is famous under the name of Bertha of Rosenberg (in Bohemia). The White Lady of other princely castles was identified with Bertha, and this was accounted for by the intermarriages of other princely houses with members of the house of Rosenberg.

White League, the name given a semi-military organization, gathered to repress the negroes of the State of Louisiana, who, it was asserted, were meditating insurrection. The organization had its inception in the city of New Orleans, in 1874, and on the refusal of the city authorities to allow the landing of a cargo of firearms, which the league had imported from New York, a riot ensued which resulted in more than 100 deaths. The league afterward became a powerful factor in Louisiana politics.

White Leprosy, in pathology, leprosy characterized by morbid whiteness of the skin. It does not exactly correspond to the ancient description, but diseases often somewhat alter their character.

White Light, the apparently simple sensation which is nevertheless really produced on the retina by a certain mixture of colors. Ordinarily white light is composed of the whole of the visible colors of the spectrum, as in sunlight; and the fact of white resulting from this mixture can be demonstrated in many ways, as by reuniting the spectral colors themselves, or by revolving rapidly a disk painted with the colors in separate sectors. A similar mixture of pigments fails, partly because the pigments themselves are never pure colors, and partly and chiefly because pigments act rather as absorbents of the light reflected from the paper or other colors underneath than as additional illuminating colors.

White Mountains, a mountain chain of New England, regarded as an outlier of the Appalachian range commences at the head waters of the Aroostook river, in Maine, where its first summit is Mount Katahdin, and extends in a broad plateau from 1,600 to 1,800 feet high nearly across New Hampshire, where it has 20 bold peaks, with deep narrow gorges, wild valleys, beautiful lakes, lofty cascades and torrents, forming the "Switzerland of America," and a favorite resort of summer tourists. Mount Washington is the highest summit in New England. These mountains furnish the chief sources of the Connecticut, Merrimac, and Androscoggin rivers. The rocks are ancient metamorphic, with naked granite and gneiss. There are five "notches," or passages, through the mountains: the White Mountain notch, through which the Saco river passes; the Franconian notch, which permits the passage of the Pemigewasset; the Pinkham notch and the Grafton and Dixville notches, through which flows the Androscoggin. A carriage road has been constructed to the summit of Mount Washington on the E. side, and a railroad on the W. side, the latter completed in 1869. The White Mountains were first visited by white men in 1642, but no settlements were made in the region till about 1771. Since 1868 the mountains have been explored by the New Hampshire Geological Survey. There is a meteorological station on the summit of Mount Washington.

White Pass, a pass over the coast range of Alaska, about 10 miles S. of Chilkoot Pass. It was first regularly used in 1897 by travelers to the Klondike gold regions. A wagon road was constructed over it in 1898.

White Plains, village and capital of Westchester county, N. Y.; on the New York Central & Hudson River railroad; 22 miles N. N. E. of the Grand Central depot, New York City; is historically known as the scene of a battle, Oct. 28, 1776, in which the British caused the Americans to retreat. Pop. (1930) 35,830.

White Sea, a large branch or gulf of the Arctic Ocean which extends S. W. into the Russian Province of Archangel as far as the 64th parallel. It forms three well-known bays: on the N. W. the bay of Kandala, the longest of the three; on the S. E., the bay of Dvina (or Archangel), the broadest of the three; and on the S., the bay of Onega. Its depth varies from the sand-banks at the mouth of the Dvina to nearly 700 feet in the bay of Kandala, and its chief affluents are the Mezen, Dvina, Onega, and Vyg. The White Sea is connected with the Black and Caspian Seas by canals joining the Dvina and Volga and Volga and Dnieper. The passage to the White Sea was discovered in 1553 by Richard Chancellor, an officer under Sir Hugh Willoughby. The English in 1584 established the little fort of Archangel as the center of the White Sea trade, in which they enjoyed great privileges till the founding of Petrograd.

Whiting, fine chalk pulverized and freed from all impurities by elutriation. It is used in whitewashing, distemper painting, cleaning plate, etc.

Whiting. The fish called the whiting is met with on all the coasts of Northern Europe, and is caught in great numbers with hook and line. The fish derives its English name from the pearly whiteness of its flesh, which is highly esteemed, and large quantities of which are salted and dried.

Whitlock, Brand, an American diplomat; born in Urbana, O., March 4, 1869; acquired a public school education; engaged in journalism in 1887; was admitted to the bar in 1894; elected mayor of Toledo four times, in 1905–11; and was appointed Minister to Belgium, Dec. 2, 1913. When the Germans invaded Belgium (Aug. 3, 1914), Minister Whitlock and the Spanish Minister dissuaded the authorities of Brussels from attempting a futile defense of the city, and when the Germans were approaching Brussels, the representatives of all the then neutral Powers decided not to join the flight of the Court and Government to Antwerp. During his stay in Belgium Minister Whitlock rendered most effective service in behalf of the sorely-stricken Belgians.

Whitman, Marcus, an American pioneer; born in Rushville, N. Y., Sept. 4, 1802. In 1836 he emigrated to work as a missionary among the Indians of the Upper Columbia. He was soon followed by other emigrants who settled in what was then known as Oregon, and which now forms the States of Oregon, Washington, and Idaho. At this time the Hudson Bay Company were using every possible means to secure this territory to the English. When this plan became evident to Dr. Whitman he decided to take every precaution to forestall it. The Ashburton-Webster treaty was then before Congress and was expected to settle the Oregon question. Knowing that the government should have full information as to the true state of affairs, Whitman rode over 3,000 miles on horseback, enduring all the hardships of a Western winter in the mountains, and reached Washington on March 3, 1843, only to find that the treaty had been signed. Fortunately the Oregon question had not been included. Dr. Whitman at once went to work and taught the government the value of the land it had deemed worthless, demonstrated to the people the fertility of the soil of Oregon, and the fact that it could be reached by wagon, and then returned at the head of 1,000 emigrants. By his daring ride and his earnest endeavors Dr. Whitman won this great section for the United States, and the results of his work were secured by the treaty of 1846. In 1847, with his wife and some others, he was massacred by the Cayuse Indians.

Whitman, Sarah Helen Power, an American poet; born in Providence, R. I., in 1803. She married John W. Whitman, a Boston lawyer; was once engaged to Edgar Allan Poe, afterward writing a defense of him entitled "Edgar A. Poe and his Critics" (1860); and was noted for her conversational powers. She published several volumes of poems. Died in Providence, R. I., June 27, 1878.

Whitman, Walt, an American poet; born in West Hills, Long Island, N. Y., May 31, 1819. Like many another man of genius Whitman seems to have owed little to his formal education, as he left school at the age of 12 to serve first in a lawyer's and then in a doctor's office, and finally in a printer's as an apprentice. But that he profited by such schooling as he had is shown by the fact that his next employment was that of itinerant teacher in country schools. He returned shortly to his printing, with spells of summer holiday and even farm work, and in 1846 became editor of the Brooklyn "Eagle." This and his other numerous press engagements were only of short duration, a certain restlessness, making him pass rapidly from one post of employment to another. He even built and sold houses at one time. All along haunted by the yearning and sense of obligation to produce a life work, Whitman seemed quite unable to find full and free expressions for his emotions and thought till he hit upon the curious, irregular, recitative measures in which he composed the "Leaves of Grass." When first issued in 1855 this unique publication was but a small quarto of 94 pages, but it grew in the course of the seven succeeding editions till it contained nearly 400 pages. The later and complete editions, taken together with his prose book "Specimen Days and Collect," may be held to embrace the life work of Whitman as a writer. Summoned to tend his own brother, wounded in the Civil War, he became the brother nurse to every

wounded or sick man in the Union army. About the close of the war he received a subordinate clerkship under the government, and was summarily dismissed by Secretary Harlan as the author of "an indecent book"; though he fortunately obtained a similar post almost immediately. In 1874 he left Washington for Camden, N. J., where he lived till his death, March 26, 1892.

Whitman College, a coeducational institution in Walla Walla, Wash.; founded in 1859 under the auspices of the Congregational Church.

Whitney, Adeline Dutton (Train), an American author; born in Boston, Mass., Sept. 15, 1824. Besides writing for magazines, she published: "Faith Gartney's Girlhood"; "A Summer in Leslie Goldthwaite's Life," etc. She died in 1906.

Whitney, Eli, an American inventor; born in Westboro, Mass., Dec. 8, 1765; was graduated at Yale College, in 1792, where he paid his expenses partly by school teaching, partly by mechanical labor. He went to Georgia as a teacher, but finding a generous patron in the widow of General Greene, of the Revolutionary army, he resided on her estate and studied law. The cotton culture at this period was limited by the slow and difficult work of separating the cotton from the seed by hand. Whitney set to work to remedy this under great disadvantages, but the reports of his success prompted some lawless people to break into his workshop and steal his machine, and get others made before he could secure a patent. He formed a partnership with one Miller in 1793, and went to Connecticut to manufacture cotton gins; but the lawsuits in defense of his rights carried off all his profits and $50,000 voted him by the State of South Carolina. Finally in 1798 he obtained a government contract for the manufacture of firearms, and was the first to effect the division of labor by which each part was made separately. He made a fortune by this manufacture, carried out with ingenious machinery at Whitneyville, Conn. He died in New Haven, Conn., Jan. 8, 1825.

Whitney, Henry Howard, an American military officer; born in Glen Hope, Pa., Dec. 25, 1866; was graduated at the United States Military Academy and commissioned lieutenant 4th United States Artillery in 1890. He was on special duty at the War Department from April 1, 1896, till April 11, 1898, when he was detailed as military attache to the United States legation at Buenos Ayres, Argentine Republic. He made a military reconnoissance of the island of Porto Rico in 1898, and served throughout the Spanish-American War on General Miles' staff; commanded the coast artillery at San Francisco from 1915.

Whitney, Josiah Dwight, an American geologist; born in Northampton, Mass., Nov. 23, 1819; was graduated at Yale in 1839, and the year after joined the survey of New Hampshire. The years 1842–1847 he spent in study in Europe, returning to explore, together with J. W. Foster, the Lake Superior region. Whitney next spent two years traveling in the States E. of the Mississippi. He was appointed State chemist and professor in the Iowa State University in 1855. In 1858–1860 took part in the survey of the lead region of the Upper Missouri. He was appointed State Geologist of California in 1860. In 1865 he was appointed to the chair of geology at Harvard, received the L.L. D. degree from Yale in 1870, and had the honor of giving his name to one of the highest mountains in the United States. He died at Lake Sunapee, N. H., Aug. 18, 1896.

Whitney, William Collins, an American capitalist; born in Conway, Mass., July 15, 1841; was graduated at Yale College in 1863, and at the Harvard Law School in 1865; studied law in New York city, and was there admitted to the bar. He took an active part in the proceedings against the "Tweed Ring"; served as corporation counsel in 1875–1882; and was Secretary of the Navy in 1885-1889. He died Feb. 2, 1904.

Whitney, William Dwight, an American educator; born in Northampton, Mass., Feb. 9, 1827; was graduated at Williams College in 1845; spent some years abroad in study; in 1854 was made Professor of Sanskrit at Yale, in 1870 of com-

parative philology, holding both positions till death. His writings are authority on all philological questions, and his rank as a Sanskrit scholar is of the first order. His contributions to the "North American Review," the "New Englander," and other periodicals, were numerous and varied. Professor Whitney was the superintending editor of the "Century Dictionary" (1889–1891), and assisted in the preparation of "Webster's Dictionary" (1864). He died in New Haven, Conn., June 7, 1894.

Whitside, Samuel Marmaduke, an American military officer; born in Toronto, Canada, Jan. 9, 1839; entered the United States army in 1858; served with the 6th United States Cavalry through the Civil War; and was afterward engaged for more than 25 years in the Indian wars on the Western frontier. He was in command of the 5th United States Cavalry during the Spanish-American War; and in October, 1898, took command of the 10th Cavalry and accompanied that regiment to Cuba in May, 1899, where he was placed at the head of the Department of Santiago and Puerto Principe in January, 1900. He became Brigadier-General in 1901. Died at Washington, D. C., Dec., 1904.

Whitsunday, the seventh Sunday after Easter; a festival of the Episcopal Church in commemoration of the descent of the Holy Spirit on the day of Pentecost.

Whittemore, Thomas, an American clergyman; born in Boston, Jan. 1, 1800. He was joint editor of the "Universalist Magazine," sole editor and proprietor of the "Trumpet"; member repeatedly of the Massachusetts Legislature. He died in Cambridge, March 21, 1861.

Whittier, John Greenleaf, an American poet; born near Haverhill, Mass., Dec. 17, 1807. The son of a poor farmer, who was also shoemaker, young Whittier obtained his education with that struggle which seems to foster genius, while the bodily frame that so well served him till his decease was developed and hardened by his healthy, outdoor life. He had a notable schoolmaster in Joseph Coffin, an enthusiastic collector of all local legends and antiquities, adding to wild nature the weirder interest of strange dark, and thrilling human deeds and dread-born superstitions. For his technical education Whittier was apprenticed to journalism, beginning with contributions to the "Poet's Corner" and as early as 1829 undertaking the editorship of the "American Manufacturer"; and in 1830 that of the "New England Weekly Review," published in Hartford, Conn. His next move was a return to his native town to a similar post on the Haverhill "Gazette" in 1832, after having published in the previous year "Legends of New England" and "Moll Pitcher." Long before this his poetry had attracted the admiration of William Lloyd Garrison, who rode over from Newburyport to see Whittier when quite a lad, and became his life-long friend. So it fell out that, if Garrison may be called the preacher or prophet, Whittier must be wreathed the poet laureate of abolition. Apart from this strenuous and heroic struggle there is nothing epoch making in Whittier's life literary or personal. He died in Hampton Falls, N. H., Sept. 7, 1892.

Whortleberry, small shrubs of two genera. The species are numerous, mostly natives of the northern parts of the world, with evergreen or deciduous, more or less ovate leaves. The common whortleberry, or bilberry, of the genus Gaylussacia, varies from a few inches to almost two feet in height, and has ovate deciduous leaves, and dark purple berries, covered with a mealy bloom. A variety occurs, but rarely, with white berries. The berries are very sweet and agreeable, and are much used for making jelly and tarts. The red whortleberry (Vaccinium vitis-idæa), also called cowberry, is found in the United States and Europe. The berries, dark red in color, are acid, somewhat austere, and not so agreeable as the bilberry; yet they make an excellent jelly, and are much used as an accompaniment to venison and other roast meats. The whortleberries of the genus Gaylussacia are commonly called huckleberries in North America.

Whydah Bird, or Widow Bird, the common name of a family comprising beautiful birds, inhabiting

Western Africa, and particularly abundant in the country of Whydah, whence their name, of which widow is a mere corruption. The body of the whydah bird is generally about the size of a canary bird, but the male is remarkable for an astonishing development of plumage during the breeding season, after which its splendid tail drops off, and the sexes are then barely distinguishable.

Wiard, Norman, an American inventor; born in Normandale, Ontario, Canada, in 1826; was early employed as a foreman in a foundry in Bradford, Ontario, and there began the series of experiments in founding ordnance that afterward gave him his world-wide distinction. During the Civil War he was employed by the United States government in the manufacture of ordnance and projectiles. After the war he applied himself to experiments and inventions in his special lines; patented a device for preventing the explosion of steam boilers, which he sold to the United States and Japanese governments; spent two years in Japan in the government employ; and on his return to the United States conducted a series of experiments in gunnery near Boston, Mass., which attracted wide attention. He died Sept. 11, 1896.

Wichita, city and capital of Sedgwick county, Kan.; on the Arkansas river and several railroads; 160 miles S. W. of Topeka; is in a wheat, corn, and stock-raising section; is a leading trade distributing center of the State; manufactures bridge and iron work, railroad cars, brick, lumber, and watches; and contains Wichita University, Fairmount College, All Hallows and Lewis academies, and a Federal Building. Pop. (1930) 111,110.

Wickersham, George Woodward, an American lawyer; born in Pittsburg, Pa., Sept. 19, 1858; began practice in Philadelphia in 1880; settled in New York city in 1882; became a special and general counsel for several large railroad corporations; Attorney-General of the United States in 1909–13.

Widdin, a town and fortress of Bulgaria, on the right bank of the Danube; opposite Kalafat; 18½ miles from the Servian frontier, and 130 miles E. S. E. of Belgrade. It is the seat of a Greek bishop, and has an important citadel greatly strengthened since 1854, built on a low hill, and surrounded with a double circumvallation with four gates to the land side and five to the river. Widdin is the Bononia of the Romans. In 1801 it was the scene of the defeat of the Hospodar Michael Sutsos by Paswan Oglu, and here in October, 1853, Omar Pasha began the hostilities against Russia by crossing the Danube and occupying Kalafat, whereafter ensued several battles in the neighborhood between the Turks and Russians, the chief on April 6 and 19, 1854. In the war of 1877–78 Widdin was occupied by 10,000 Turks. Osman Pasha was commandant, and it was from Widdin he made his unexpected march to Plevna — the scene of his early victories and his heroic defense. By the Berlin treaty of July 13, 1878, Widdin went to the principality of Bulgaria. Pop. about 18,000.

Widener, Peter A. Brown, an American capitalist; born in Philadelphia, Pa., Nov. 13, 1834. He became president of the West Philadelphia Passenger Railway Company, vice-president of the Union Passenger and the Philadelphia Traction Companies; a director of the Continental and Empire Passenger Companies; and in 1902 was head of a syndicate organized to acquire large street railroad interests in New York city. In 1897, he gave his city residence in Philadelphia for a branch of the Free Lending Library; in 1898 presented a collection of 500 rare books to the library; and in 1899 undertook to provide a combined home, hospital, and industrial school, in Philadelphia. He died Nov. 6, 1915.

Widow Sacrifice, a form of funeral sacrifice in which the widow was slain or induced to commit suicide so that she might be buried with her husband and accompany him to the world of spirits. This practice is mentioned as existing among the Greeks by Euripides and Pausanias, and from Cæsar it may be inferred that it existed also in Gaul. It was abolished in British India in 1829.

Wiesbaden, a town of Prussia, province of Hesse-Nassau; until

1866 capital of the independent duchy of Nassau; on the S. W. spurs of the Taunus Mountains, 377 feet above the sea; 6 miles W. of Mainz. The chief attraction at Wiesbaden is its mineral springs. The German emperor, William II. and Czar Nicholas II. of Russia, had a cordial meeting at Wiesbaden, in November, 1903, which was regarded as tending to maintain peace in Europe. Pop. (1928 Est.) 117,000.

Wig, a covering for the head, not merely to conceal baldness, but, like elaborate coiffures of the natural hair, to add to the dignity or formidableness of the wearer. Wigs are found on Egyptian mummies, and are indicated in Assyrian sculptures and passed from Persians, Medes, Lydians, and Carians to Greeks and Romans. But the wigmaking and wigwearing as known to moderns originated in France, and the palmy days of wigs were in the 17th and early 18th centuries. Louis XIV. wore a wig till then of unparalleled size. The English full dress wig of Queen Anne's time was similar; and this cumbrous type survives in the full-dress flat-bottomed wig of English judges, which has flaps of 20 or more rows of stiff and formal curls hanging down in front. Another form was the bag wig — the lower part of the wig being tucked into a silken bag on the shoulders. When the wearing of wigs was fully established small boys of the well-to-do classes went to school in wigs and cocked hats. In the early part of George III.'s reign it became more and more usual for private persons to do without wigs, wearing their own hair powdered and tied or looped up like a wig; professional men, especially doctors, stuck longer to them. Just before the French Revolution, which dealt the final death-blow to wig-wearing, a gentleman's wig would cost from $150 to $200. Wigs to supply natural deficiency of hair are made of human hair. Stage wigs are often made of jute.

Wigan, a municipal, parliamentary, and county borough in Lancashire, England; on the Douglas river, 21 miles N. E. of Liverpool. It is the center of an extensive coal field, and has manufactures of cotton goods, and iron and steel, railroad car, and other works. Its mediæval parish church of All Saints is a stately edifice. Pop. (1920) 93,104.

wigan (named from the above borough), an open, canvas-like fabric, used as a stiffening in the lower ends of the legs of pantaloons and as a skirt protector on the lower inside surface which drags on the floor and pavement.

Wigeon, one of the most popular birds with the American sportsman. Length about eighteen inches; the male has the forehead and top of head white, cheeks and hind part of the neck reddish-chestnut, upper parts grayish-white, irregularly zigzagged with black, wing coverts white tipped with black, primaries dark brown, speculum green, edged with black; throat rufous, breast and belly white; the female has sober plumage of various shades of brown. The wigeon is one of the commonest ducks of the extreme N. of Europe, frequenting grassy swamps, lakes, and rivers, and feeding in the daytime, chiefly on aquatic vegetation. The American wigeon is larger than the European or common wigeon, and has the upper parts finely waved transversely with black and reddish-brown, top of head and under parts white. It breeds chiefly in the N. parts of America and is common in winter on the coasts of the United States and in the rice fields. The flesh of both species is esteemed for the table, and they are hunted both for food and for sport.

Wiggin, Kate Douglas, an American author; born (Smith) in Philadelphia, Pa., Sept. 28, 1857. Her youth was spent in Hollis, Me., and she attended Abbott Academy in Andover, Mass. She went to California in 1876, where she studied the kindergarten system in Los Angeles; later, she taught a year in Santa Barbara College; then went to San Francisco, where she organized the first free kindergarten in the West. In 1880 she organized the California Kindergarten Training School. In 1880 she married S. B. Wiggin, a lawyer, and they moved to New York, where Mr. Wiggin died in 1889. In 1895 Mrs. Wiggin married George C. Riggs. She has written many stories and books on and for the kindergarten. D. 1923.

Wigglesworth, Michael, an American clergyman; born in Yorkshire, England, Oct. 18, 1631. His best-known work, "The Day of Doom" (1662), was a popular poem in New England for a long period. He died in Malden, Mass., June 10, 1705.

Wight, Orlando Williams, an American editor; born in Centerville, N. Y., Feb. 19, 1824. A Universalist minister originally, he practised medicine in Wisconsin, where he was appointed State geologist and surgeon-general in 1874; health commissioner of Milwaukee, 1878–1880; later he was health officer of Detroit. He wrote: "Lives and Letters of Abelard and Heloise"; "Maxims of Public Health"; etc. He died in Detroit, Mich., Oct. 19, 1888.

Wight, Isle of, an island off the S. coast of England; in the county of Hants; separated from the mainland by Spithead and the Solent; 23 miles in length, 13 miles broad; area, 93,341 acres. The general appearance is picturesque, and the geology of the island is interesting. The air is remarkably mild, and the district known as the Undercliff, lying along the S. coast, and completely sheltered from the N. has long been a resort for invalids. Near Cowes is Osborne House, which was a favorite residence of Queen Victoria.

Wigwam, an Indian hut or cabin. They are generally of a conical shape, formed of bark or mats laid over stakes planted in the ground, and converging toward the top, where there is an opening for the escape of the smoke. The word has also been applied to a large temporary structure for public gatherings; as, the wigwam in which the Democratic National Convention was held in Chicago, in the year 1892.

Wilberforce University, a co-educational institution in Wilberforce, O.; for colored students; founded in 1856 under the auspices of the Methodist Episcopal Church.

Wilbour, Charles Edwin, an American Egyptologist; born in Little Compton, R. I., March 17, 1833. He was associated with the New York journals up to 1872, when he began the study of Egyptian antiquities; and was afterward the companion of Brugsch Bey and Maspero in many exploring expeditions in Upper Egypt. Died in Paris, France, Dec. 17, 1896.

Wilburites, a section of American Quakers, named from their leader, John Wilbur, who separated from the main body in the first half of the 19th century on the ground that the Quakers were abandoning their original principles.

Wilcox, Ella Wheeler, an American poet; born in Johnstown Center, Wis., about 1855. She contributed much to current periodicals, and her poems were widely copied. Some of her volumes are: "Maurine"; "Poems of Passion"; "Poems of Pleasure"; "Drops of Water"; "A Woman of the World"; "Art of Being Alive," etc.

Wilcox, Robert William, an American statesman; born in Kuhulu, Honolulu, Hawaii, Feb. 15, 1855; was graduated at the Royal Military Academy, Turin, Italy, in 1885; returned to Hawaii and in 1889 headed the revolution in Honolulu to restore the old constitution. In 1895 he commanded the revolutionists in an effort to restore Queen Liliuokalani, in their struggle with the Dole government; was captured and sentenced to death; but at the request of the United States government, President Dole commuted the sentence to imprisonment for 35 years, with $10,000 fine. In 1896, he was pardoned, and in 1901 was elected the delegate in Congress for Hawaii. He died in 1903.

Wilde, George Francis Faxon, an American naval officer; born in Braintree, Mass., Feb. 23, 1845; was graduated at the United States Naval Academy in 1864; attached to the steam sloop "Susquehanna" of the Brazil squadron in 1865–1866; promoted master in 1866; lieutenant and lieutenant-commander in 1868; commander in 1885; and captain in 1898. He was given charge of the dispatch boat "Dolphin," in which he made a trip around the world. In 1889 he was made lighthouse inspector. During the Spanish-American War in 1898 he was in command of the ram "Katahdin." In command of the "Boston" he landed the first marines

ever landed in China, and sent them to Peking, where they guarded the legation, November, 1898–April, 1899; captured the city of Iloilo, Philippine Islands, Feb. 11, 1899; captured Vigan, Feb. 18, 1900; and was in command of the "Oregon" when she grounded at an uncharted ledge in Pe-chi-li Gulf. The "Oregon" was badly damaged. but was saved. He died Dec. 3, 1911.

Wilder, Alexander, an American physician; born in Verona, N. Y., May 13, 1823; was graduated at Syracuse Medical College in 1850. He was president of the Eclectic Medical College, New York (1867); lecturer on physiology (1873–1877); Professor of Physiology and of Psychological Science in the United States Medical College. He died in 1908.

Wilder, Burt Green, an American educator; born in Boston, Mass., Aug. 11, 1841; was graduated at the Lawrence Scientific School; and served in the Union army as medical cadet, assistant surgeon, and surgeon of the 55th Massachusetts Infantry in 1862–1865. In 1863 he discovered a large spider, from which he reeled 150 yards of yellow silk. He was Professor of Neurology, Vertebrate Zoology, and Physiology at Cornell University in 1867–1910.

Wilder, Marshall Pinckney, an American humorist; born in Geneva, N. Y., Sept. 19, 1859; received a fair education, and became a stenographer. He soon developed a remarkable ability as a humorist, which was rendered all the more attractive by his diminutive stature; and for several years he was a popular entertainer, especially in private drawing-room gatherings, both in the United States and England. He died Jan. 10, 1915.

Wilderness, a location in Spottsylvania co., Va.; 16 miles W. of Fredericksburg. During the Civil War a sanguinary battle was fought here, May 5 and 6, 1864, between the Federal troops under General Grant, and the Confederates, commanded by General Lee, which, after a terrific struggle, and unprecedented slaughter, particularly on the side of the Federals, resulted in both sides claiming the victory, General Lee, nevertheless, gradually retiring on Spottsylvania. The Federal loss amounted to 18,000 men; that of the Confederates to about 11,000.

Wildes, Frank, an American naval officer; born in Boston, Mass., June 17, 1843; was graduated at the United States Naval Academy in 1863; served on the steam sloop "Lackawanna" in the West Gulf squadron till the surrender of Fort Morgan; and was then detailed to the monitor "Chickasaw," on which he served till the occupation of the city of Mobile in 1865. After the war he served on various stations; was commander of the cruiser "Boston" on the Asiatic station in 1895-1898; and was engaged in the battle of Manila Bay on May 1 of the latter year. He was appointed to the New York navy yard in 1899, promoted rear-admiral in 1901; died in 1903.

Wild Fowl, the name applied to birds of various species, which are pursued as game, but restricted by some authorities to birds belonging to the waders and swimmers.

Wild Goat, a popular name for any undomesticated species of the genus Capra, many of which have been erected into separate genera by some authorities. They are: Spanish ibex, the Sinaitic ibex, the markhoor, the tahr, and the Neilgherry ibex.

Wild Goose, any species of undomesticated goose — especially the Canadian goose, Branta canadensis; bean goose and the graylag. A "wild-goose chase" means the pursuit of anything in ignorance of the course it will take; hence, a foolish pursuit or enterprise.

Wild Horse, any undomesticated individual of the species Equus caballus. According to Darwin, no aboriginal or truly wild horse is known, and the herds of so-called wild horses in Asia are probably, as those in America and Australia are certainly, descended from ancestors which escaped from the control of man.

Wild Hunt, the name given by the German people to a fancied noise sometimes heard in the air at night, mostly between Christmas and Epiphany, as of a host of spirits rushing along, accompanied by the shouting

of huntsmen and the baying of dogs. According to the common legend the wild huntsman appears on horseback, in hat and cloak, accompanied by a train of spirits, often without heads, or otherwise mutilated. When he comes to a crossroad, he falls, and gets up on the other side. Generally he brings hurt or destruction, especially to any one rash enough to address him or join in the hunting cry, as many persons valiant in their drink have done. Whoever remains standing in the middle of the highway, or steps aside into a tilled field, or throws himself in silence on the earth, escapes the danger. The legend has also in recent times attached itself to individual sportsmen, who, as a punishment for their immoderateness or cruelty in sport, or for hunting on Sunday, were condemned henceforth to follow the chase by night. In Lower Germany there are many such stories current. In one form or other the legend of the wild hunt is spread over all German countries, and is found also in France, and even in Spain. In England we meet substantially the same notion in folklore.

Wilhelmshaven, the chief naval port of Germany, one of its newest and most advanced type, on the N. W. side of Jade bay, 40 miles N. W. of Bremen. The town, first projected in 1856, was laid out on a strip of ground bought by Prussia from Oldenburg in 1864, and was inaugurated by King William in 1869. It is now a fortress of the first rank, defended by outlying forts and an elaborate system of torpedoes, and, with its moles, extensive basins, dry docks, vast stores for the navy, and workshops for all the requirements of a fleet, has been a very costly creation. A harbor for commercial purposes has been made to the S. of and connected with the naval one. Pop. about 40,000.

Wiley University, a coeducational institution for colored students, in Marshal, Tex.; founded in 1873 under the auspices of the Methodist Episcopal Church.

Wilkes, Charles, an American naval officer; born in New York city, April 3, 1798; entered the navy in 1816 and became a lieutenant in 1826. In 1838 he commanded an exploring expedition sent by the United States government to the Antarctic regions. He visited South America, Samoa, the Fiji, Hawaiian, and other islands in the Pacific; and made a voyage around the world, returning in 1842. He became commander in 1843, and captain in 1855. In 1861, while in command of the "San Jacinto," he intercepted the British steamer "Trent" and took as prisoners J. M. Mason and J. Slidell, Confederate commissioners to Europe. In 1862 he was promoted commodore, after which he commanded a squadron in the West Indies. In July, 1866, he was made a rear-admiral. He died in Washington, D. C., Feb. 8, 1877.

Wilkes-Barre, a city, the seat of Luzerne Co., Pa., on the north branch of the Susquehanna, about 144 miles N. W. of Philadelphia. It is the center of a rich anthracite coal-field, and has manufactures of machinery, locomotives, cars, mining engines, and tools, iron castings, ropes, brewery products, etc. Pop. (1930) 86,626.

Wilkie, John Elbert, an American Secret Service agent; born in Elgin, Ill., April 27, 1860; began newspaper work on the Chicago "Times" in 1877; was on the Chicago "Tribune" in 1881–1893; engaged in banking and the steamship business in London, England, in 1893–1896; and in the latter year returned to the United States and resumed his work on the Chicago newspapers, making a specialty of criminal investigation. In 1898–1912 he was chief of the United States Secret Service, and during the Spanish-American War broke up the Spanish spy system in the United States.

Wilkinsburg, a borough in Allegheny county, Pa.; on the Pennsylvania railroad; 7 miles E. of Pittsburg, with which it has much business and residential interests in common, and has coal-mining nearby. Pop. (1930) 29,539.

Wilkins-Freeman, Mary Eleanor, an American author; born in Randolph, Mass., in 1862. Her works, studies of New England country life, are: "The Love of Parson Lord"; "Understudies"; etc. She was married to Dr. Charles M. Freeman, Jan. 1, 1902.

Wilkinson, William Cleaver, an American educator; born in Westford, Vt., Oct. 19, 1833; was graduated at the University of Rochester in 1857; and in 1873 became dean of the Department of Literature and Art in the Chautauqua University, for which he prepared many text-books. In 1892 he became Professor of Poetry at Chicago University.

Will, in law, the declaration, in proper form, of what a man wills to be performed after his death; usually spoken of as the "last will and testament."

Will, a mental phenomenon of which there are recognized three orders or classes; Cognition, feeling, and will. The first includes all the ways in which facts and relations become known; the second refers to the way in which the mind is affected as regards pleasure and pain; to the third, or will, belong all those mental states in which the mind or subject is regarded as producing changes either in the state of mind itself or in its bodily environment. The movements thus produced are called voluntary, and the mental acts producing them volitions.

Willamette River, a river in Oregon, rises in Lane county, and flows into Columbia river, 8 miles below Fort Vancouver, after a N. N. W. course of 200 miles, of which it is navigable for large vessels 15 miles to Portland, and above the falls for small steamboats about 60 miles. The valley of the Willamette is very fertile and picturesque, and is usually styled the "garden of Oregon."

Willamette University, a coeducational institution in Salem, Or.; founded in 1844, under the auspices of the Methodist Episcopal Church.

Willard, Emma (Hart), an American educator; born in Berlin, Conn., Feb. 23, 1787. She did much for bettering the education of women. Died in Troy, N. Y., April 15, 1870.

Willard, Frances Elizabeth, an American temperance reformer; born in Churchville, near Rochester, N. Y., Sept. 28, 1839. Her early education was received at Oberlin College, and her parents removing to Illinois she was graduated at the Northwestern Female College at Evanston, Ill., in 1859. After some years spent in teaching she became Professor of Esthetics in the Northwestern University, and was made president of the Woman's College in February, 1871. She began her active temperance work in 1874, and was made secretary of the National Woman's Christian Temperance Union. In 1879 she was made president of that organization and held the office till her death. She was chosen as president of the World's Christian Temperance Union in 1888, and in 1892 visited England as the guest of Lady Henry Somerset, the well-known temperance worker. During her visit in London she addressed a mass meeting at Exeter Hall which was said to be the largest and most intensely interesting assemblage ever held in its walls. She was an untiring worker and for 10 years averaged one public meeting a day, besides writing letters and articles, and planning work while in transit between towns at which she spoke. She was editor-in-chief of the "Union Signal" from 1892, and a frequent contributor to other periodicals and newspapers, being an admirable writer and a journalist of rare tact, quickness and force. She was an orator of great eloquence, humor, and power. Her executive ability and genius for organization were wonderful and her work for temperance and social purity will live in the history of her country. She died in New York city, Feb. 18, 1898.

Willett's Point, an American military reservation on Long Island Sound; 20 miles N. E. of the Battery, New York city, and opposite Fort Schuyler. It contains 136 acres which were purchased by the government in 1857 and 1863. The original intention was to build a powerful fort here to reënforce Fort Schuyler in the defense of the E. entrance to New York harbor; but on account of the changes made in the methods of attack and defense during the Civil War the work was left unfinished. In 1864 the Grant General Hospital and numerous temporary structures were built here, and at the close of the war a station for experiments with torpedoes, a depot for materials and stores, and a school

of practice were established. The present school was organized in 1885. Its staff comprises a commandant, three company commanders, a battalion adjutant, and a quartermaster.

William I., the Conqueror, King of England, the natural son of Robert, Duke of Normandy; born in Falaise, in 1027. He was brought up at the court of the King of France, and succeeded to the duchy at the age of eight. But during his minority there were frequent revolts of the nobles, and his authority was not fully established for many years. On the death of Edward the Confessor, King of England, William made a formal claim to the crown, alleging a bequest in his favor by Edward, and a promise which he had extorted from Harold. His claim being denied, he at once prepared for an invasion of England; effected a landing at Pevensey, Sept. 28, 1066, while Harold was engaged in opposing the Norwegians in the N., and fortified a camp near Hastings. The decisive battle of Hastings was fought on Saturday, Oct. 14, 1066; Harold was defeated and slain, and the Norman Conquest was commenced. His rival, Edgar Atheling, was supported by some of the leading men for a short time; but they all made submission to William, and on the following Christmas day he was crowned at Westminster. He reigned with great tyranny; in consequence of which several insurrections took place. To prevent nightly meetings and conspiracies, he instituted the curfew, or "cover-fire bell," at the sound of which every night, at eight o'clock, all fires and candles were to be put out. A survey was made of all the lands in the kingdom, the account or register of which was called the "Domesday Book." In 1078 he finished the Tower of London; in 1087 he attacked and destroyed the city of Mantes. He was about to march toward Paris, but died in Rouen, Sept. 9, 1087.

William II., usually called Rufus; born in Normandy in 1056, the son of the Conqueror, and crowned on the news of his father's death reaching England, in 1087. He made a conquest of a part of Wales, and obtained the duchy of Normandy from his brother Robert, in 1095. He was a great persecutor of the clergy. William was accidentally slain by an arrow, as he was hunting in the New Forest, Hampshire, Aug. 2, 1100.

William III., of Nassau, Prince of Orange and King of England; born in The Hague, Holland, Nov. 14, 1650; was the son of William, Prince of Orange, and Mary, daughter of Charles I. He married the Princess Mary, daughter of James II.; became stadtholder of Holland in 1672. He was made general of the troops of Holland against Louis XIV., and made a vigorous resistance to the French armies under Luxembourg, whom he defeated in 1674; but was repulsed in his turn by the Prince de Conde. In 1688 the arbitrary measures, both against the established religion and the constitution, of James II., induced many nobles and others to invite the Prince of Orange to take possession of the English crown. He landed without opposition at Torbay, the same year. James withdrew to France, and William took possession of his throne. His coronation as King of England took place in 1689. The year following William went to Ireland, where he defeated James at the battle of the Boyne. In 1691 he headed the confederate army in the Netherlands, took Namur in 1692, and in 1697 was acknowledged King of England by the treaty of Ryswick. On the death of Mary in 1694, the Parliament confirmed to him the royal title. His death was owing to a fall from his horse, March 8, 1702.

William IV., King of England; born in London, Aug. 2, 1765; the third son of George III. In his 15th year he entered the royal navy, and in 1780 was with Admiral Rodney when the latter defeated a Spanish squadron off Cadiz, and afterward proceeded to the relief of Gibraltar. Prince William subsequently held the command of a vessel of war in various parts of the world, but retired from active service in 1790. On the death of his brother, George IV., in 1830, he became King of England, and ruled till 1837. At his death, the Princess Victoria, daughter of his brother, the Duke of Kent, became Queen of England. He died in Windsor, June 20, 1837.

William I., Emperor of Germany, and King of Prussia, son of Frederick William III., by Princess Louise of Mecklenburg-Strelitz, and brother of Frederick William IV.; born in Berlin, March 22, 1797, received a military education, and took part in the campaigns of 1813 and 1815 against France. In 1840 he was appointed governor of Pomerania, which post he held till the revolution of 1848, when he sought refuge in England. He was elected a member of the Constituent Assembly in May of the same year, when he returned to Berlin. In 1849, as Commander-in-Chief of the Prussian army, he acted against the revolutionary Badeners; and in 1858, on the lunacy of his brother, the king, becoming manifested, William was appointed regent. This position he occupied till Frederick William's death, in 1861, when he succeeded to the throne. William speedily embroiled himself and government with the liberal parliamentary body of that day; and this to so critical a degree, after the accession of Bismarck to the premiership in 1862, that the rupture threatened to end in revolution or civil war. A diversion from this state of things was, however, happily effected by the war which Prussia, with Austria, declared against Denmark. In 1866, war was next declared by Prussia against her old ally, Austria; and after a short campaign, Austria was compelled to make a humiliating peace. By this war Prussia obtained supremacy in Germany. In July, 1870, the Emperor Napoleon III., taking umbrage at Prussian interference with the succession to the vacant Spanish throne, or prompted by other motives, rashly declared war against Prussia, a power long prepared for such a contingency. On this, William, forming an alliance with the South German States, crossed the Rhine, and in a short campaign, defeated the French, took Napoleon and his principal commanders prisoners, and received the capitulation of Paris, in February, 1871. Peace was declared by a treaty entered into at Versailles, by which Prussia acquired the province of Alsace, part of that of Lorraine, including the city of Metz, along with a war indemnity of $1,000,000,000. His success in the war with France led to an offer from the German States of the imperial crown of Germany, which he accepted. He was crowned Emperor of Germany at Versailles, Jan. 18, 1871. His 90th birthday was celebrated throughout Germany, March 22, 1887, and he died March 9, 1888. He was succeeded by his son Frederick, who was succeeded in the same year by his son William, as William II.

William II., former German Emperor and King of Prussia; b. Jan. 27, 1859, and ascended the throne June 15, 1888, upon the death of his father, Frederick III., of Prussia, and Frederick I., of Germany. Although of warlike tastes, his early reign was apparently peaceful, save for hostilities with African and Polynesian savages, brief hostile operations against Venezuela and Haytian rebels, Germany's share in the allied expedition against China, and the monstrous barbarities of the World War. He maintained the German army at a high grade of efficiency, and energetically promoted the construction of a powerful navy. He supported with vigor the imperial dignity, and caused any unfavorable reflection or innuendo regarding the ruling house to be punished with severity. He was a man of much learning and considerable ability, usually distant, but at times most gracious in his demeanor. He is said to be earnestly desirous of being on good terms with the United States, although the arrogant and aggressive attitude of some of his naval officers at the time of the Spanish-American war somewhat imperiled friendly relations. Although so abrupt at times in his actions that he was known as "William the Sudden," his ultimate decision commonly proved to be the outcome of careful deliberation. A few years before the precipitation of the World War he declared that by his national policies he had preserved the peace of Europe for twenty-five years. In religion he is a sincere Lutheran. He married the Princess Victoria of Schleswig-Holstein-Sonderburg-Augustenburg, and has one daughter, the Princess Victoria Louise, born Sept. 13, 1892, married Prince Ernst August of Cumberland, Duke of Brunswick, May 27, 1913; and six sons, the eldest, Prince

Friedrich Wilhelm, Crown Prince of the German Empire and of Prussia, born May 6, 1882, married the Princess Cecilie, of Mecklenburg-Schwerin, June 6, 1915. As result of World War, with defeat of Germany and allies, he abdicated Nov. 9, 1918. Sought refuge in Holland. Now established at Castle of Zoarn, Holland.

William I., Frederick, King of Holland, Grand-Duke of Luxembourg, Prince of Orange and Duke of Nassau; born in The Hague, Aug. 24, 1772. He distinguished himself in the wars with the French republic, and became an exile with his father, the hereditary stadtholder of the Dutch republic, in 1795; after his father's death, he succeeded to the duchy of Nassau, and joined the Prussian army against Napoleon. He became King of Holland by the settlement of affairs which followed the fall of Napoleon in 1814. He abdicated in 1840, and died in Berlin, Dec. 12, 1843.

William II., Frederick George Lewis, son and successor of the preceding; born in The Hague, Dec. 2, 1792, distinguished himself in the Peninsular war under Lord Wellington; he also commanded the army of the Netherlands at the battle of Waterloo. His reign commenced from his father's abdication in 1840. He died March 17, 1849.

William III., Alexander Paul Frederick, son and successor of the preceding; born in The Hague, Feb. 19, 1817. While Prince of Orange, William married, 1839, the Princess Sophia Frederica Matilda, daughter of the late King William I., of Wurtemberg. They had two sons; William Nicholas Alexander Frederick Charles Henry, Prince of Orange; born in 1840, and William Alexander Charles Henry Frederick; born in 1851, and died in 1884, the last male heir of the house of Orange. William III. died at the Castle of Loo, Nov. 23, 1890.

William I., surnamed The Lion, King of Scotland; born in 1143, a grandson of David I., and brother of Malcolm IV., whom he succeeded in 1165. His predecessors had long contested with the Kings of England the sovereignty of Northumberland and other districts of what is now the N. of England. Under Malcolm these claims were virtually abandoned and the King of Scots received, as a sort of equivalent for them the earldom of Huntingdon and other valuable estates. William attended Henry of England in his continental wars, and is supposed, when doing so, to have pressed for the old disputed districts. Disappointed therein, he invaded them after the example of his ancestors. On July 13, 1174, he fell into the hands of an English party. For security he was conveyed to Normandy, and there he consented, as the price of his liberation, to perform that homage for his kingdom which the English kings so long in vain attempted to exact from the government of Scotland. The treaty of Falaise, as the transaction was termed, was revoked in the year 1189 by Richard I. of England in consideration of a payment of 10,000 marks, which he wanted for his celebrated expedition to Palestine. William had several disputes with the Church, but he was one of the early benefactors of the regular ecclesiastics. William died in Stirling in 1214.

William I., of Nassau, Prince of Orange, surnamed The Silent; the first leader in the Dutch war of independence; born in Dillenburg, Nassau, April 14, 1553. Being trained to political employments he conformed outwardly to Catholicism, and had become governor of the provinces of Holland, Zealand, and Utrecht, while the reformed doctrines were spreading, and events were ripening for the revolt of the Netherlands.

Philip II., King of Spain, having appointed Margaret of Parma, a daughter of Charles V., stadtholdress, with the Cardinal of Granville for adviser, the latter began his career by persecuting the Protestants, and was preparing to introduce the inquisition, when, 1566, the nobles petitioned Margaret against this measure. As they were treated with contempt, their remonstrances were followed by popular commotions. Alva was sent, at whose approach 100,000 of the most industrious Flemings took refuge in foreign countries. This was the crisis at which William came forward, and raised the standard of independence.

Though the cruel Alva was recalled at the end of six years, 1574, and replaced by a milder ruler, the Dutch continued the war, and Holland was liberated by the relief of Leyden, which William effected by laying the whole country under water in 1575. He was now elected stadtholder, and Calvinism became the established religion. By the "Pacification of Ghent" in 1576, William united all the provinces in one confederation, but he found it impossible to heal these internal causes of disunion, and the Spaniards were able to repossess themselves of the S. provinces under the Duke of Parma. Philip had set a price on William's head, and in 1582, an attempt was made to assassinate him, but he recovered from the wound. A second attempt was successful. One Balthaser Gerard, being introduced to the stadtholder on the plea of business, suddenly drew a pistol loaded with three balls, and shot him in the body at Delft, July 10, 1584 causing his death. For this dastardly crime the relatives of the assassin were ennobled by the Spanish king.

William and Mary College, an educational, non-sectarian institution in Williamsburg, Va.; founded in 1693.

William Jewell College, an educational institution in Liberty, Mo.; founded in 1849 under the auspices of the Baptist Church.

Williams, Annie (Bowles), an American juvenile story writer; born in Connecticut, in 1840. She published "Birchwood"; "The Fitch Club"; etc.

Williams, Arthur Llewellyn, an American clergyman; born in Owen Sound, Ontario, Canada, Jan. 30, 1856; received an academic education and engaged in the railroad business in Colorado for several years; was graduated at the Western Theological Seminary, Chicago, in 1888, and ordained in the Protestant Episcopal Church in 1889; rector of St. Paul's Church, Denver, in 1891–1892, and of Christ Church, Chicago, in 1892–1899; and was consecrated Bishop-Coadjutor of Nebraska, Oct. 18, 1899.

Williams, Mrs. Catharine R. (Arnold), an American author; born in Providence, R. I., about 1790. She died in Providence, Oct. 11, 1872.

Williams, Francis Howard, an American dramatic writer; born in Philadelphia, Pa., in 1844. Among his plays are: "The Princess Elizabeth: A Lyric Drama"; "A Reformer in Ruffles"; etc.

Williams, Sir George, founder of the Young Men's Christian Association; born in Dulverton, Somersetshire, England, Oct. 11, 1821. In 1841 he went to London; gathered together the young men employed in the same establishment as himself, and on June 12, 1844, organized, with 12 of them a band called the "Young Men's Christian Association," which was designed to be "a society for improving the spiritual condition of young men engaged in the drapery and other trades." He was the first treasurer of the Young Men's Christian Association. He died Nov. 6, 1905.

Williams, John, an American clergyman; born in Deerfield, Mass., Aug. 30, 1817; was graduated at Trinity College in 1835; traveled abroad and was ordained in the Protestant Episcopal Church in 1841; was president of Trinity College in 1848–1853; and in 1854 became dean of the Berkeley Divinity School in Middletown and held that post till his death. In 1865 he was consecrated Bishop of Connecticut. He died Feb. 7, 1899.

Williams, John Skelton, an American financier; born in Powhatan co., Va., July 6, 1865; was educated at the University of Virginia; engaged for many years in organizing financial and industrial institutions; became connected with the U. S. Treasury Department in 1913; appointed Comptroller of the Currency in 1914. He was also treasurer of the American Red Cross and a member of the Federal Reserve Board under the National Banking Act of 1913.

Williams, Oscar Fitzalan, an American diplomatist; born in Livonia, N. Y., June 20, 1843; was graduated at Cornell University in 1869; engaged in teaching for 20 years; was consul to Havre, France, in 1889–1893. After the Spanish-American War he was active in the adjustment of the Philippine Islands to their new conditions. He was the last United

States consul in Manila, having been appointed in 1897. On Jan. 4, 1901, he was made consul-general at Singapore, Straits Settlements.

Williams, Roger, the founder of the State of Rhode Island, and distinguished as the first asserter in modern Christendom of the sanctity and perfect freedom of conscience; born in London, England, in 1604; studied at Oxford, entered the Church, and naturally joined the Puritan party. To escape the persecutions to which the Puritans were subject in England, he fled to America to find freedom to worship God. He arrived at Boston, New England, in 1631, but soon found himself in collision with the churches already existing there; for they still acted on the very principles of which they had been the victims at home. At length, in 1636, he was ordered to embark for England. To avoid this he left Salem in mid-winter, wandered houseless and half-fed for 14 weeks, then found friends and hospitality among the Indians, whose language he had learned. He preached to them, won their love, and was their friend and peace-maker till his death. He had resolved on founding a new settlement, and after beginning to build and plant at Seekonk, had to abandon the spot, and selected Rhode Island, on which he landed from an Indian canoe, with five comrades, in June, 1636. He called the place "Providence," and commenced building. In the course of two years he was joined by others, and founded a commonwealth in the form of a pure democracy, and his system has had its influence on the whole political history of the State. To secure the permanent existence of Rhode Island as a separate State, Williams went to England in 1643, and obtained a charter. He died in Providence in 1683.

Williams, Samuel Wells, an American philologist; born in Utica, N. Y., Sept. 22, 1812. He assisted in preparing a Chinese, and afterward a Japanese, dictionary; was interpreter for Commodore Perry in Japan; secretary of legation in China; and Professor of Chinese at Yale. He died in New Haven, Feb. 17, 1884.

Williamsport, city and capital of Lycoming county, Pa.; on the W. branch of the Susquehanna river and the Pennsylvania and other railroads; 94 miles N. by W. of Harrisburg; is one of the greatest lumber markets in the country; is chiefly engaged in various manufactures of lumber, besides silk and rubber goods, iron work, sewing machines, furniture, and brick; and has a Federal Building, and many charitable institutions. Pop. (1920) 36,198.

Willis, Nathaniel Parker, an American author; born in Portland, Me., Jan. 20, 1806; was educated at Boston, Andover, and Yale College; employed by S. P. Goodrich (Peter Parley) to edit "The Legendary" (1828) and "The Token" (1829); established the "American Monthly Magazine," which was merged in the "New York Mirror"; traveled in France, Italy, Greece, European Turkey, Asia Minor, and finally England; returned to America in 1837, and afterward edited "The Home Journal." His numerous published writings include: "Pencillings by the Way"; "Inklings of Adventure"; etc. Died near Newburg, N. Y., Jan. 20, 1867.

Willoughby, William Franklin, an American economist; born in Alexandria, Va., July 20, 1867; was graduated at Johns Hopkins University in 1888; appointed expert in the United States Department of Labor in 1890; and in 1900 was chosen special agent on Education and Social Economy of the United States Commission to the Paris Exposition. He was several times a representative of the Department of Labor at international congresses for the investigation of labor conditions in Europe, and became Professor of Jurisprudence and Politics at Princeton in 1912; author of "Workingmen's Insurance."

Willow, any species of the genus Salix. Some of the willows furnish good timber, among which is the Huntingdon or white willow. It is 80 feet high, with a girth of 20 feet. The timber is used for carpentry and for fuel, and the bark for tanning. It is common in America.

Willow Wren, or **Willow Warbler,** in ornithology, called also the yellow wren, from the localities it

frequents and the general color of its plumage. In temperate climates the willow wren begins to couple about the end of April. The nest is placed on the ground, most commonly against a bank among long grass or weeds, but often at the foot of a bush, and, like that of the wood wren, is covered with a dome having a rather wide hole in the side, whence this species and its congeners are called "oven birds."

Wilmington, a city, the county-seat of New Castle Co., Del., 28 miles south-west of Philadelphia, near the Delaware between Brandywine and Christiana Creeks. It is regularly built, and has a university, a city-hall, an opera-house, a hospital, and an extensive trade. The U. S. census on Manufactures in 1925 credited Wilmington with 181 plants, employing $41,976,059 capital and yielding products valued at $76,502,097, the most important being steam railroad cars, and foundry and machine shop products. Wilmington dates from Fort Christina, and the village of Christinaham, founded by Peter Minuet, commanding the first Swedish expedition to America.

Pop. (1920) 110,168; (1930) 106,597.

Wilmington, a city and port of entry, county-seat of New Hanover Co., N. C., on Cape Fear River, 160 miles N. E. of Charleston. It is the largest town in the State, and has turpentine distilleries, machine-shops, etc. Pop. (1930) 32,270.

Wilmot, David, an American jurist; born in Bethany, Pa., Jan. 10, 1814; was admitted to the bar in 1834; member of Congress in 1845–1851, being author of the celebrated "Wilmot Proviso." He was presiding judge of the 13th District of Pennsylvania; United States Senator; and became a judge of the United States Court of Claims in 1863. He died in Towanda, Pa., March 16, 1868.

Wilmot Proviso, a notable resolution introduced into the United States Congress by David Wilmot. On Aug. 8, 1846, pending the consideration in Congress of a bill placing $2,000,000 at the disposal of President Polk to negotiate a peace with Mexico, David Wilmot, a representative from Pennsylvania, offered the following amendment: "Provided, that neither slavery nor involuntary servitude shall ever exist in any part of territory, acquired from Mexico, except for crime, whereof the party shall first be duly convicted." This was the famous "Wilmot Proviso," which became the source of great agitation throughout the country. It was adopted in the House by a vote of 94 to 78, and was under debate in the Senate when the hour arrived previously fixed for the adjournment of the session. At the next session, Mr. Wilmot again introduced it. The House remained firm in favor of the amendment, and it was passed by a decided majority, but not acted on by the Senate.

Wilson, Alexander, a Scotch-American ornithologist; born in Paisley, Scotland, July 6, 1766. In early life he was a weaver and teacher. He published a volume of poems in 1790, but being sentenced for a lampoon in 1793, emigrated to America. He was employed as editor of the American edition of Rees's "Cyclopædia"; but in his wanderings as peddler, he learned to love birds, and set about writing on ornithology. At his death seven volumes of this work had been published; the eighth and ninth volumes were edited by George Ord, and a continuation by Charles Lucien Bonaparte. Volumes of his poems were published at Paisley in 1816, and at Belfast in 1857. He died in Philadelphia, Pa., Aug. 23, 1813.

Wilson, Allen Benjamin, an American inventor; born in Willet, N. Y., Oct. 18, 1824; was a cabinet maker by trade, but in 1849 invented a sewing machine which made a stitch at each movement of the shuttle, and thereafter devoted himself to its improvement. On the completion of his sewing machine he entered into partnership with Nathaniel Wheeler, a practical manufacturer, and began to make his machine in a small shop in Watertown, Conn., but soon afterward removed to Bridgeport, Conn., and there established the largest factory of its kind in the world. In 1852, however, on the reorganization of the firm he withdrew from the business and settled in Waterbury, where he engaged in other enterprises. He died in Woodmont, Conn., April 29, 1888.

Wilson, Augusta Jane (Evans), an American novelist; born near Columbus, Ga., about 1838. She lived some years in Texas; and now at Mobile, Ala. Her works have very considerable popularity. Died in 1909.

Wilson, Henry (born Jeremiah Jones Colbaith), an American statesman; born in Farmington, N. H., Feb. 16, 1812; was mainly self-educated and learned the trade of shoe making. On attaining his majority he had his name changed by the legislature to that by which he was best known. He became an abolitionist in 1835; supported William Henry Harrison for the presidency in 1840; was elected to the Massachusetts House of Representatives in the same year; and held a seat in the State Senate, and was its president for two years. In 1855 he was elected to the United States Senate. On May 22, 1856, Charles Sumner, his colleague, was assaulted by Preston S. Brooks, and on the next day Senator Wilson pronounced the action "brutal, murderous, and cowardly." Soon afterward Brooks challenged Wilson to a duel, but the latter refused on the ground that duelling was both unlawful and barbarous. During his career in the Senate he was a fearless opponent of slavery. He was reëlected to the Senate; in 1861 became chairman of the Committee on Military Affairs. In this capacity, at the beginning of the Civil War he influenced Congress to pass an act permitting the recruiting of 500,000 men. He was a third time returned to the Senate, and there remained till elected Vice-President of the United States in 1872, on the ticket with General Grant. He died in Washington, D. C., Nov. 22, 1875.

Wilson, James, an American agriculturist; born in Ayrshire, Scotland, Aug. 16, 1835. He removed with his father to the United States in 1852, and in 1855 settled in Iowa. He served three terms in the Iowa Legislature, being speaker for two years; was elected to Congress. In 1890–97 he was Professor of Agriculture in the Iowa Agricultural College. In 1897 he was appointed Secretary of the Department of Agriculture and served by reappointments till 1913 with conspicuous ability. Died, 1920.

Wilson, James Grant, an American author; born in New York city, April 28, 1832; served in the Civil War. Besides numerous addresses, essays, and articles in periodicals, he published: "Biographical Sketches of Illinois Officers"; "Life of General Grant"; etc. He was the editor (with John Fiske) of "Appleton's Cyclopædia of American Biography," and alone, of "Memorial History of the City of New York." Died in 1914.

Wilson, James Harrison, an American military officer; born in Shawneetown, Ill., Sept. 2, 1837; was graduated at the United States Military Academy in 1860 and assigned to the Department of Oregon in the topographical engineer service. During the Civil War he served with distinction as an engineer, and took a leading part in the capture of Jefferson Davis. On July 28, 1866, he was brevetted Major-General, U. S. A., for gallant and meritorious services during the war, and on Dec. 31, 1870, was honorably discharged at his own request. After leaving the army he was engaged in large railroad and engineering operations, and on the outbreak of the Spanish-American War was appointed Major-General U. S. V., and assigned to the command of the 1st Division, 1st Army Corps, in the campaign in Porto Rico. Brigadier-General, U. S. A., by special act of Congress and retired in 1901.

Wilson, Jeremiah Morrow, an American jurist; born in Warren co., O., Nov. 25, 1828; received an academic education; was judge of the Court of Common Pleas of Fayette co., Ind.; judge of the Circuit Court; member of Congress; declined a renomination; resumed the practice of law in Washington, D. C. In 1901, after the Navy Department had granted the request of Admiral Schley for a court of inquiry, the admiral chose Judge Wilson as his chief counsel. While serving as such he died suddenly in Washington, D. C., Sept. 24, 1901.

Wilson, John Moulder, an American engineer; born in the District of Columbia, Oct. 8, 1837; was graduated at the United States Military Academy in 1860, and entered the Artillery, but was transferred to



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CERAMIC AND DECORATIVE ART

1. Hirschvogel Tile (Germany XVI Century); 2. Japanese Satsuma Bowl; 3. Palissy Plate (France, XVI Century); 4. Persian Bowl (XVI Century); 5. Delft Vase (Holland, XVIII Century); 6. Spanish-Moresque Majolica Urn (XIV Century); 7. Henry II Flagon (France, XVI Century); 8. Glazed Bas-Relief, in Tile, by Lucca Della Robbia (Florence, about A. D. 1500); 9. Majolica Plate, from Urbino (Italy, XVI Century); 10. Porcelain Tile, Minton (England, XIX Century); 11. Chinese Vase; 12. Wedgwood Pitcher (England, XVIII Century); 13. Dresden Coffee-Pot, Meissen (XVIII Century); 14. German Tile, with Coat of Arms; 15. Venetian Millefiori Glass; 16. Rookwood Jar (United States, XIX Century); 17. Royal Worcester Plate (England, XIX Century).



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THOMAS WOODROW WILSON (1856-1924)
Twenty-eighth President of the United States

the Ordnance Department the same year, and to the Engineer Corps, in which he rendered conspicuous service, in 1863. He was Chief of Engineers, U. S. A., in 1897–1901; was retired in the latter year; and represented the army at the coronation of King Edward VII. in 1902.

Wilson, Theodore Delevan, an American naval constructor; born in Brooklyn, N. Y., May 11, 1840; was an apprentice in the Brooklyn navy yard; entered the construction department of the navy in 1861; in 1866 he was made an assistant naval constructor; and was appointed chief of the Bureau of Construction and Repair in 1882, 1886, and 1891. He died June 29, 1896.

Wilson, William Baudrop, an American executive; born in Blantyre, Scotland, April 2, 1862; came to the United States in 1870; acquired a public school education; engaged in mining; member of Congress in 1907–13; became Secretary of the Department of Labor in 1913.

Wilson, Woodrow, an American statesman; born in Staunton, Va., Dec. 28, 1856; was graduated at Princeton College in 1879; studied law at the University of Virginia; practiced at Atlanta, Ga., in 1882–1883; took a special course at Johns Hopkins University in 1883–1885; was Associate Professor of History and Political Economy at Bryn Mawr College in 1885–1888; professor of the same at Wesleyan University in 1888–1890; Professor of Jurisprudence and Politics at Princeton University in 1890–1902; president in 1902–1910; resigned to accept the Democratic nomination for governor of New Jersey; and was elected for the term of 1911–1914. As governor, he waged a long and successful fight with the machine leaders in his own party to uphold the will of the people as expressed in the primaries and by other methods, and soon came to be regarded as a promising possibility for the Presidential nomination of his party. He made several extended speaking tours, and early in 1912 was recognized as one of the foremost candidates for the nomination. At the Democratic National Convention in July, 1912, he received 990 votes to 84 for Speaker Champ Clark (Mo.) and 12 for Gov. Judson Harmon (Ohio) on the forty-sixth ballot. In the ensuing election he received the largest electoral vote (435) on record, defeating President Taft and Theodore Roosevelt. In 1916 he was again elected, receiving 277 electoral votes to 254 for Charles E. Hughes, the Republican nominee, who resigned as an Associate Justice of the U. S. Supreme Court on receiving his party's nomination. In 1885 he married Ellen L. Axson, of Savannah, Ga., who died Aug. 6, 1914, and in 1915, Edith B. Galt, of Washington, D. C.

President Wilson's official career as Chief Executive of the United States is comprised in two distinct parts, the purely domestic and the international. The former only is here summarized; for the latter, see APPENDIX: *Mexican Campaign; The United States in the World War.*

At the beginning of his first administration he made the following Cabinet appointments: Secretary of State, William Jennings Bryan, of Nebraska; Secretary of the Treasury, William Gibbs McAdoo, of New York; Secretary of War, Lindley Miller Garrison, of New Jersey; Secretary of the Navy, Josephus Daniels, of North Carolina; Attorney-General, James Clark McReynolds, of Tennessee; Postmaster-General, Albert Sidney Burleson, of Texas; Secretary of the Interior, Franklin Knight Lane, of California; Secretary of Agriculture, David Franklin Houston, of Missouri; Secretary of Commerce, William Cox Redfield, of New York; and Secretary of Labor, William Baudrop Wilson, of Pennsylvania. Of these official advisors, Mr. Bryan and Mr. Garrison resigned because of holding views differing from those of the President on policies regarding the early part of the World War, and were replaced by Robert Lansing, of New York, and Newton Diehl Baker, of Ohio, respectively. The Attorney-General was promoted to the U. S. Supreme Court, and was succeeded by Thomas Watt Gregory, of Texas. With these changes, the Cabinet was continued into the second administration.

The President made a noteworthy innovation in official procedure at the outset of his first administration by delivering in person his formal mes-

sage to the Congress, assembled in joint session for the purpose, the first time a President had done so in upward of 100 years. It is also worthy of note that the extra session of the Sixty-third Congress, which he called, was the second longest one in the history of the country, the sitting lasting from April 7, 1913, to March 4, 1915.

Due to the President's earnest initiative the Congress adopted bills providing for the direct election of United States Senators (now the XVIIth Amendment to the Federal Constitution); for an income tax (now the XVIth Amendment).

President Wilson's state papers covering the great climaxes of the World War are found in the appendix under the chronological history of the World War.

After the Armistice President Wilson visited England, France, Belgium and Italy. He formed with Premier Lloyd George of England, Premier Clemenceau of France, and the Premier of Italy, Orlando, the "Big Four" on whose decisions all matters of supreme importance were final in the Inter Allied Peace Conference in Paris in 1919.

The outcome of the Peace Conference was the forming of the League of Nations. This proposed League, however, aroused intense opposition in the United States. The President not only had to face the opposition of the Republican Party but met with much antagonism within his own party.

To combat this contravention to his cherished project for world government and world betterment as he saw it, the President determined to tour the country and to appeal by speech directly to the people. This effort, however, following on his exertions during the war brought on a serious breakdown in health in September, 1919.

The President's failing health prevented his active participation in the presidential campaign of 1920 which resulted in an overwhelming victory for the Republican candidate for the presidency.

His last year as president was a most uneventful one in strong contrast to the epoch-making years that had preceded. His term of office ended March 4, 1921.

After his retirement Mr. Wilson formed a law partnership with Mr. Bainbridge Colby, who had been Secretary of State from March, 1920, to March, 1921. His death occurred February 3, 1924.

Winans, Ross, an American inventor; born in Vernon, N. J., in October, 1796; built the first locomotive used on the Baltimore and Ohio railroad. He also invented the camelback locomotive and the eight-wheeled car, and established in Baltimore the largest machine shops in the United States. He died in Baltimore, Md., April 11, 1877.

Winans, Thomas DeKay, an American engineer; born in Vernon, N. J., Dec. 6, 1820; son of Ross; was made a partner with his father and his brother, William Lewis. In 1843 the Russian government invited his father, with Andrew M. Eastwick, and Joseph Harrison, to undertake a contract to build a railroad from St. Petersburg to Moscow. He took his father's place and with the others mentioned executed the contract. Subsequently other contracts were made in Russia which were very lucrative. He designed with his father and brother a tubular arrangement for the feeding of young trout, and a system of steam navigation known as the cigar-ship. He died in Newport, R. I., June 11, 1878.

Winchell, Alexander, an American geologist; born in Dutchess co., N. Y., Dec. 31, 1824. He lectured extensively and contributed to many journals. He died in Ann Arbor, Mich., Feb. 19, 1891.

Winchester, Battle of, the name of several engagements in the American Civil War. The most important were: (1) A battle fought at Kernstown, Va., near Winchester, March 23, 1862, between the Federals under General Shields and the Confederates under General Jackson, in which the former were victorious. This battle is sometimes called the battle of Kernstown. (2) A victory gained by the Confederates under General Early, over the Federals under General Crook, July 24, 1864. (3) A battle fought by the Federals under General Sheridan and the Confederates under General Early, at Winchester, Va., Sept. 19, 1864. The latter were defeated, with a loss of 5,000 men.

Wind, air in motion; the distributer of heat and moisture over the earth's surface; constituting a principal factor of the weather.

Windau, a seaport of Russia; Province of Courland; on the Baltic Sea at the mouth of the Windau river; 60 miles N. E. of the coast city of Libau; 100 miles N. W. of Mitau; is one of the oldest towns of W. Russia; has a deep harbor in the Baltic; a castle built in 1290, and an active trade in grain, flax, hemp, and timber. Pop. (1919) 16,400.

Wind Instruments, musical instruments the sounds of which are produced by the action of the breath of a player or of a pair of bellows on a column of air. The organ is really a collection of wind instruments of different kinds. Those of wood have a soft tone, those of brass a loud and powerful tone.

Windlass, a mechanical contrivance used on board ship for raising anchors and other heavy masses. The principle of its action is the same as that of the capstan, from which it differs mainly in the horizontality of its axis. It consists essentially of a large roller, supported in checks or windlass bitts, and rotated by handspikes fitting into mortices in the windlass, or by means of a single handle.

Windmill, a mill which receives its motion by the wind acting on sails, and which is used for grinding grain, raising or pumping water, and other purposes.

Windom, William, an American financier; born in Belmont, O., May 10, 1827; began practising law in Mount Vernon, O., in 1850. In 1852 he was made prosecuting attorney of Knox county, O. He held this position for three years, when he removed to Minnesota. He was sent to Congress from that State in 1859, and was reëlected to serve four successive terms, a period of 10 years. He was appointed to the United States Senate in 1870 to fill the unexpired term of Daniel S. Norton, deceased. He resigned, in 1881 to accept the Treasury portfolio in President Garfield's cabinet, and on his retirement from the cabinet after that President's death he returned to the Senate, where he served the remainder of his term. He became Secretary of the Treasury in President Harrison's cabinet in 1889, and died in New York, Jan. 29, 1891.

Wind Signals, signals adopted by the United States for announcing the approach of wind storms. They are principally for the information of maritime interests, and are distinct from the system of weather, temperature, and rain signals displayed throughout the country.

Windsor, properly called New Windsor, a parliamentary borough of Berkshire, England, on the Thames, is chiefly interesting on account of the antiquity of its castle and park, which have been a favorite residence of English monarchs since the time of William the Conqueror. The older palace of the English kings was Old Windsor, about 2 miles distant. The chapel, which was begun by Henry III., was completed by Edward III., rebuilt by Henry VII., and added to by Cardinal Wolsey. Under this chapel is the burial vault of the present royal family. The park and forest immediately adjoining are 13,000 acres in extent.

Windward, The, the vessel in which Lieutenant Peary sailed from New York city, July 2, 1898, on his fifth expedition in search of the North Pole. She was originally a sailing vessel, but was fitted up with steam in 1866. She was for many years used as a whaler and went yearly to Greenland from 1860 to 1875, and on three successive years from 1865 she made a second trip to Davis Strait. The Jackson-Harmsworth polar expedition went in this vessel and afterward brought Nansen's party home. To the "Windward" belongs the honor of having proved the navigability of the Franz-Josef Land seas. She is constructed entirely of oak, doubled and tripled with African oak, and latterly has been greatly strengthened to resist enormous ice-pressure.

Windward Islands, a group in the West Indies, comprising St. Lucia, St. Vincent, Barbadoes, Grenada, and Tobago.

Wine, a spirituous liquor produced by fermentation from vegetable substances containing saccharine matter. There are a great many vegetable substances from which, by this process,

wine may be produced, such as apples, pears, currants, elderberries, and others; but unless otherwise expressed, the term is always used to indicate the fermented juice of fruit of the common vine.

Wine, American. The first production of wine from native grapes in the United States was in Florida in 1663; but no important attempt to develop wine making in the United States was made till 1828, when Nicholas Longworth, of Cincinnati, engaged in the business. The industry was also soon after developed in Missouri. More recently the industry has been largely developed in New York. Several others of the Eastern States produce wine. The wines of the E. part of the country are much more acid than those of the Pacific coast. California is far the greatest wine-producing State of the Union.

Winebrenner, John, an American clergyman; born in Frederick co., Md., March 24, 1797; was ordained in the German Reformed Church in 1820; and in the same year was called to the Salem Church in Harrisburg, Pa. He retained his connection with that charge till 1827, when, owing to his religious views on temperance and slavery, he was asked to withdraw; and in 1828 his connection with the Reformed Church ceased by action of the synod. In October, 1830, he established a new denomination under the name of the "Church of God," whose members became known as Winebrennerians. He died in Harrisburg, Pa., Sept. 12, 1860.

Wines, Enoch Cobb, an American penologist; born in Hanover, N. J., Feb. 17, 1806. He became secretary of the New York State Prison Association in 1862, and afterward devoted his life to the promotion of reform in the administration of criminal law and treatment of criminals. He died in Cambridge, Mass., Dec. 10, 1879.

Wines, Frederick Howard, an American statistician; born in Philadelphia, Pa., April 9, 1838; was graduated at Washington College, Pa., in 1857, and at Princeton Theological Seminary in 1865; was a chaplain in the Union army in 1862–1864; pastor of the First Presbyterian Church, Springfield, Ill., in 1865–1869; became secretary of the Illinois State Board of Commissioners of Public Charities in 1869, and its president in 1893. He was made assistant director of the U. S. census in 1899. He died in 1912.

Wingate, George Wood, an American lawyer; born in New York city, July 1, 1840.

Winnipeg, Lake, a lake of Canada, province of Manitoba; length, about 250 miles; average breadth, 50 miles; 40 miles north of the city of Winnipeg; chief tributaries are the Saskatchewan and Red Rivers. Winter fishing is carried on extensively in the northern part of the lake.

Winnipeg, capital of the province of Manitoba, Canada at the confluence of the Red and Assiniboine Rivers, 40 miles S. of Lake Winnipeg, first settled in 1812, incorporated as a city, 1873, pop. (1930 Est.) 212,000. Winnipeg is the railway center for 27 lines including the C. N. R., and the C. P. R., the latter maintaining there the largest individual yards in the world. It is the fourth largest manufacturing city in Canada with 870 industrial plants in 1930 employing 27,243 persons and turning out products valued at $153,000,000. Winnipeg is the world's largest primary grain center, all eastern movements of grain raised in Western Canada clear through Winnipeg.

Higher educational facilities are provided through the University of Manitoba the student body of which, in 1930, numbered 2,842. In addition, there are five colleges, including Manitoba Agricultural College.

Winnipeg provides centralized heating plants, consumers purchasing steam delivered via pipe lines on meter rates. Pop. (1930) 212,000.

Winona, a city, and county-seat of Winona Co., Minn., beautifully situated on the west bank of the Mississippi, 100 miles S. E. of St. Paul. It is a flourishing place and an important center of trade and manufactures, grain and lumber interests predominating. Winona was settled, 1851. Pop. (1930) 20,850.

Winslow, Edward, a Mayflower emigrant and governor of Plymouth Colony; born in Droitwich, England, Oct. 19, 1595. He was a ho tage to Massasoit, his account of which was in George Morton's "Relation." He

was the author of "Good Newes from New England," etc. He died at sea, between Santo Domingo and Jamaica, May 8, 1655.

Winslow, John Ancrum, an American naval officer; born in Wilmington, N. C., Nov. 19, 1811; entered the navy about 1827, became a lieutenant in 1839, and commander in 1855. In 1862 he served under Captain Foote on the Mississippi river. He obtained command of the steamer "Kearsarge," of seven guns, and was ordered to the coast of Europe, to watch Confederate cruisers, in the early part of 1863. On June 19, 1864, he met the "Alabama," Captain Semmes, near Cherbourg. When the vessels were about a mile apart, the "Alabama" began to fire rapidly and wildly, but the guns of the "Kearsarge" were directed with coolness and precision. After they had diminished their distance to about a quarter of a mile, the "Alabama" began to sink, and raised a white flag. Captain Winslow lost only three killed and wounded. He took 65 prisoners. He was promoted commodore in 1865 and rear-admiral in 1870. He died in Boston, Mass., Sept. 29, 1873.

Winslow, William Copley, an American archæologist; born in Boston, Mass., Jan. 13, 1840; vice-president, secretary, and treasurer for many years of the Egypt Exploration Fund for the United States.

Winsor, Justin, an American historian; born in Boston, Mass., Jan. 2, 1831; became superintendent of the Boston Public Library, and librarian of Harvard University. He died in Cambridge, Mass., Oct. 22, 1897.

Winston-Salem, a municipality in Forsyth county, N. C., formerly comprising Winston city and Salem town; consolidated in 1913; 120 miles W. by N. of Raleigh; is one of the largest tobacco markets in the South; exports immense quantities of leaf tobacco; and manufactures plug and smoking tobacco and cigarettes, cotton, woolen and knit goods, flour, lumber, machinery, wagons, and furniture. Pop., combined municipalities (1930) 75,274.

Winter, the cold season of the year. Astronomically considered, winter begins in N. latitudes when the sun enters the sign of Capricorn, or at the solstice about Dec. 21, and ends at the equinox in March; but in its ordinary sense it is taken to include the months of December, January and February.

Winter, William, an American dramatic critic; born in Gloucester, Mass., July 15, 1836. He did journalistic work on the "Saturday Press," "Vanity Fair," the "Albion," "Weekly Review"; and was dramatic critic for the New York "Tribune" from 1865. Died, 1917.

Wintergreen, a name of several plants, one of them being the partridge berry. The name is also given to a genus of perennial plants having short stems, broad evergreen leaves, and usually racemose white or pink flowers.

Winthrop, John, first governor of Massachusetts; born in Groton, England, Jan. 22, 1588. He came with the first colonists to Salem in 1630 as their governor, and remained in that office, with the exception of six or seven years, till his death. He left a journal of the proceedings of the colony, which has been published, and is a valuable contribution to the early history of Massachusetts. He died in Boston, March 22, 1649. His son, John, born in Suffolk, England, Feb. 12, 1606, arrived in Massachusetts in 1633. On returning to England he collected a body of colonists and settled with them in Saybrook, Conn., and was appointed their governor, retaining the office till his death. He died in Boston, April 5, 1676.

Winthrop, Robert Charles, an American statesman; born in Boston, Mass., May 12, 1809; was graduated at Harvard College in 1828; studied law with Daniel Webster, and was admitted to the bar in 1831. He soon left law for politics and in 1843 was elected to the State Legislature, where he served five years, three as Speaker of the House. In 1840 he was elected to Congress, serving for 10 years, two years as Speaker. He was appointed Webster's successor in the United States Senate in 1850, and served one year, after which he retired from public life. He died in Boston, Mass., Nov. 16, 1894.

Winthrop, Theodore, an American military officer; born in New Haven, Conn., Sept. 22, 1828; was

graduated at Yale College in 1848; traveled extensively; studied law, and joined the 7th New York Regiment in 1861. The 1861 "Atlantic Monthly" contained sketches from him of early war scenes. He left completed material for five volumes of novels and essays. He was killed at the head of an assaulting column of Northern troops at Big Bethel, Va., June 10, 1861.

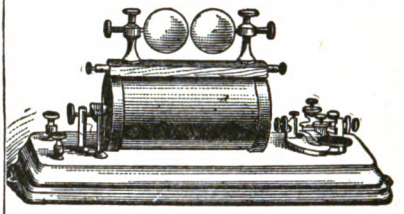
Wire, a metallic rod, thread, or filament of small and uniform diameter. The largest size, numbered 0000, has a diameter of .454 inch; but smaller sizes even than this when drawn out to considerable lengths, are generally known as bars or rods.

Wire Cloth, a fabric whose woof and weft are of wire.

Wiredrawing, the act or process of drawing metal into wire. The metal to be extended is first hammered into a bar or rod. The rods, from ¼ to ½ inches in diameter, received from the rolling mills in bundles are heated and rerolled in grooved rollers, one above the other, so that the rod runs from the first roll to the second, and so on, without reheating, reducing the rod to a coarse wire, which is then passed through the successive holes in the draw plate, a flat piece of hard steel having holes corresponding to the various numbers or sizes of wire. Very fine gold and platinum wires are formed by coating the metal with silver, which is then drawn down to a great tenuity, after which the silver coating is removed by nitric acid, leaving an almost invisible interior wire, which has been so attenuated that a mile in length weighed only a grain.

Wire Fence, a fence made of parallel strands of wire, generally galvanized, strained between upright posts. Usually the wire has, at intervals of about 18 inches, small barbs or prickles, which are intended to prevent cattle from running against or attempting to leap these fences.

Wireless Telegraphy, a system of transmitting messages between distant points without the use of wires. Though popularly supposed to be an invention of very recent years, it is a matter of record that as long ago as 1746 Winckler conducted experiments in wireless telegraphy at Leipsic, and proved conclusively that it was possible to transmit signals a few feet without wire connection of any kind. It is reported that at one time, when a picnic was being held on one bank of the Schuylkill, Benjamin Franklin arranged his electrical apparatus so that he was able to light a fire from the opposite bank, transmitting the electricity through the water of the river and using no wire connection. In 1838 Professor Henry, who was well known as one of the leading scientists of that day, transmitted signals from one room to another to a distance of 18 feet, using a coil of



WIRELESS TELEGRAPHY: AMERICAN TRANSMITTER.

wire with a transmitter in one room and another coil with a receiver in the other room.

In the fall of 1842 Professor Morse went to New York and laid an insulated wire under the water between Governor's Island and Castle Garden, with the intention of showing his friends that it was possible to transmit a message in this way. He had only received one or two signals when a vessel's anchor carried away his wire. On Dec. 16, of the same year he succeeded in telegraphing 80 feet across the Potomac at Washington, without wires. His friends and assistants, Vail and Rogers, succeeded in telegraphing without wires across the Susquehanna, at Havre de Grace, a distance of one mile. In 1855 Professor Henry, who had succeeded in 1838 in transmitting signals 18 feet, now succeeded in transmitting much further, using nearly the same apparatus, and in 1877 Elisha Gray sent signals from one to the other of the Western Electric Company's works in Chicago, by using apparatus somewhat similar to that used by Professor Henry.

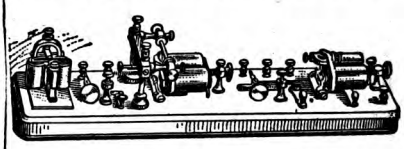
Prof. A. E. Dolbear, of Tufts College, used a perpendicular wire in exactly the same manner as Marconi used it later. Professor Dolbear's wire was raised by means of a kite to a height of 300 or 400 feet. He used two of these wires, one at the transmitting station and one at the receiving station. At the transmitting station he used a large induction coil and Morse key, and at the receiving station he used his telephone receiver, one side of it being connected to the wire in the air and the other side to the earth. In this way Professor Dolbear was able to transmit signals to a distance of over half a mile. He applied for a patent in 1882, and the examiner at Washington frankly told him that his idea was "contrary to science and would not work." But the patent was granted in 1886, when the same examiner admitted that he had made a mistake.

In 1882 W. J. Clarke, of Trenton, Canada, experimented extensively with wireless telegraphy, and though the results of his work were not very promising at that time, he predicted that before many years wireless telegraphy would be a realized fact.

In 1890 Branly discovered that by taking a tube of glass and filling it with metallic filings, and then connecting each end of the filings to a battery and telegraph instrument, the instrument would sound whenever the apparatus was brought in proximity to an induction coil, the sparks from which were made to pass between round metallic balls. This is the earliest form of coherer, and is the same as the one used by Marconi, with the exception that, by careful observation, Marconi was able to construct a much more sensitive coherer.

As usual in matters of this kind, the American inventor stepped to the front, and in 1901 apparatus was being manufactured in the United States which was doing excellent work, and was in use by the Signal Corps of the United States army, which used it between Washington and Fort Meyer, a distance of 5 miles. In April, 1902, Prof. R. A. Fessenden, working under the supervision of the United States Weather Bureau, succeeded in sending messages over 200 miles.

To Guglielmo, otherwise William Marconi, is generally ascribed the honor of inventing what is called "wireless telegraphy," or the sending of telegraphic messages without the use of other medium than the atmosphere. His apparatus was first tested with success in England and Italy, and afterward in the United States, where it was used in reporting the America's cup yacht races of 1899 and 1901, and was similarly used in reporting the races between the Reliance and Shamrock III. in 1903. Marconi has succeeded in establishing communication by wireless telegraphy across the Atlantic, and the London Times has for some time published daily dispatches received by wireless telegraph from America. Mr. W. D. Weaver, editor of the "Electrical World," recently described the principles of wireless telegraphy in the Christian Herald as follows: "Briefly, by means of a transmitter, etheric vibrations are set



WIRELESS TELEGRAPHY: AMERICAN RECEIVER.

up which are propagated through the ether and affect the coherer at the receiving end. The receiver consists of an induction spark coil, the electric discharges between the electrodes setting up the necessary disturbance in the ether. The main part of the receiver, namely, the coherer, has normally a high resistance, but when subjected to etheric waves, assumes a low resistance. In circuit with the coherer is a battery and Morse recorder or sounder. Normally, the resistance of the coherer is too great to allow the passage of an appreciable current from the battery; under the influence of the waves propagated from the transmitter, however, the resistance of the coherer is reduced, a current passes from the battery through the circuit and operates the receiving instrument. The discharges at the transmitter are controlled by a form of the ordinary telegraph key; and the messages are received, as stated above, by a form of

the ordinary Morse recorder or sounder. There are many details connected both with the transmitter and receiver of which a knowledge is necessary for a full understanding of wireless telegraphy, but the inquirer can learn of these from a book on the subject."

Other systems of wireless telegraphy are in use besides that of Marconi, but the principles are practically the same. It has been found very useful for communication between vessels at sea, which are of necessity isolated from wire and cable lines, and several of the Atlantic liners so equipped are now in continuous communication with the land throughout the voyage. In the naval and military operations of the Russo-Japanese War, it played a prominent part. In 1906 the underground wireless system of Father Murgas of Wilkesbarre was exploited, while successful experiments in sending out "single lines" were effected by Prof. Braun of Strasburg and by Prof. V. Poulsen of Copenhagen. In the same year an international wireless telegraph conference in Berlin, in which 31 governments participated, framed an agreement on the principle of free intercommunications between all systems, and the Institute of International Law at Ghent, Belgium, adopted regulations to govern wireless telegraphy in time of war. Recent high records in wireless telegraphy include the exchange of messages between Point Loma, Cal., and Puget Sound, Wash., 1,200 miles, in 1906; the establishment of the Marconi transocean system between Ireland and Nova Scotia in 1907; and a weather report communication between the U. S. S. "Tennessee," when five days out from Honolulu, Hawaii, and Table Bluff, on the northern coast of California, over 4,580 nautical miles, in 1910.

See TELEPHONE and RADIO.

Wirt, William, an American lawyer; born in Bladensburg, Md., Nov. 8, 1772; was admitted to the bar in 1792, and in 1806 settled in Richmond, Va., where he became a prominent lawyer. He distinguished himself at the trial of Aaron Burr in 1807, as one of the counsel for the prosecution. He held many State offices, being clerk of the House of Delegates, Chancellor of the Eastern Shore of Virginia, and member of the House of Delegates. He was appointed United States District Attorney in 1816, and Attorney-General in 1817, holding the latter office till 1829, through three administrations. He was nominated for President in 1832 by the Anti-Masonic party and received the electoral vote of Vermont. He died in Washington, D. C., Feb. 18, 1834.

Wirt, William Albert, an American educator; born in Markle, Ind., Jan. 21, 1874; studied educational methods in Europe; held several appointments as superintendent of public schools; settled in Gary, Ind., in 1907; established there what is known as the Gary system of education, which has been introduced in many large cities, not, however, without opposition, as in the borough of the Bronx, New York City, where, in October, 1917, some 10,000 pupils went on a strike against the system.

Wisconsin, a state in the North Central Division of the North American Union; admitted to the Union, May 29, 1848; capital, Madison; area 56,066 sq.m.; pop. (1920) 2,632,067; (1930) 2,930,067.

Wisconsin is an elevated undulating plain with an altitude of from 600 to 1,800 feet above the sea. A ridge about 30 miles S. of Lake Superior forms the watershed of the State, the ground sloping down in all directions. A high cliff extends along the shore of Green Bay and Lake Winnebago. The Mississippi river extends along the W. boundary for a distance of 250 miles. The State is famous for its numerous beautiful lakes, among which are the Winnebago, St. Croix, Pepin, Poygan, Pewaukee, Geneva, Green, Koshkonong, Oconomowoc, and Four Lakes. The lake shores have numerous excellent harbors.

The mineral resources of the State are very extensive. Lead, copper, iron and zinc occur abundantly and are mined with profit.

In 1928 there were produced 1,009,000 long tons of iron ore, 16,986 short tons of zinc, and 1,729 short tons of lead ore. The value of the total mineral output for the year was $20,889,000.

The value of all farm property in 1925 was estimated to be $1,898,766,200. There were 193,155 farms with 21,850,853 acres, of which 11,831,157

acres were improved land. In 1929 the crops were as follows: hay, 7,685,000 tons; corn, 81,440,000 bu.; oats, 85,215,000 bu.; potatoes, 20,240,000 bu.; wheat, 2,190,000 bu.; apples, 1,749,000 bu. Tobacco was also produced to the amount of 45,140,000 pounds.

In 1929 the livestock on the farms of Wisconsin were: 2,991,000 cattle; 2,023,000 milch cows; 1,331,000 swine; 555,000 horses; 456,000 sheep; 7,000 mules.

The manufacturing industry for the state was represented in 1927 as follows: There were 7,473 manufacturing plants employing 247,722 wage earners, paying $322,697,000 for wages, and $1,153,328,000 for raw materials and yielding products having a combined value of $1,973,633,000.

There were 8,209 miles of steam and 909 miles of electric railroad in 1928. The State has done extensive work in road building, and there are at present 32,700 miles of improved or hard surfaced roads, 80,931 miles of rural roads, and 6,410 miles of city streets. The total expenditure by the State for roads in 1927 was $11,758,000 and the counties in the State contributed an additional $15,000,000.

In 1928 the Department of Education reported that there were 8,315 elementary public schools with 19,808 teachers and 520,149 pupils. For higher education there were 435 public high schools with 4,768 teachers and 102,483 students. There were also 9 state normaml schools with 401 teachers and 5,008 students. The evening schools under the supervision of the state had an average daily attendance of 37,452.

The judicial arm of Wisconsin's government consists of a Supreme Court in which seven judges sit, being elected for a term of ten years; and in twenty Circuit Courts with one judge for each circuit excepting Milwaukee, which has six branches; these judges are elected by the voters in each circuit district. Each county elects a judge for its court and local justice is administered by justices of the peace who are elected for two-year terms.

The governor is elected for a term of two years, and receives a salary of $7,500 per annum. Legislative sessions are held biennially in odd years, beginning on the second Wednesday in January, and there is no limit to length of session. The Legislature has 33 members in the Senate and 100 in the House, each of whom receives $500 per annum and mileage. There are 11 representatives in Congress.

The region W. of Lake Michigan was first explored and occupied by French missionaries and traders in 1639, and the country was held thenceforward under French dominion till its surrender to Great Britain in 1763. Canadian law governed the territory, and the English kept possession with a military force at Green Bay till 1796, when it reverted to the Americans, who included it within the extended limits of their government of the Northwest Territories. In 1809 Wisconsin was annexed to the Territory of Illinois, as then formed, and so continued till the conversion of the latter into a State in 1818, when Wisconsin, which was yet a wilderness, was annexed to Michigan Territory, for such government as was needed. In 1827, lead was discovered in large quantities at Potosi and Mineral Point and there was a great rush of immigrants to that section. The Indians soon became troublesome, and the Black Hawk War ensued in 1832. In 1836, the population had increased to such an extent that a Territorial government was organized, which at first included a part of the upper peninsula of Michigan, the whole of Minnesota and Iowa, and that part of the Dakotas lying E. of the Missouri and White Earth rivers. On the admission of Michigan into the Union as a State, a part of the Lake Superior region was set off to her, and when the Territory of Iowa was formed it included all the region W. of the Mississippi. The first effort to procure the admission of Wisconsin to the Union as a State was made in 1846. A constitution drafted during that year was ratified in March, 1848, and the State was admitted to the Union, May 29, 1848.

Wisconsin, a river which rises on the northern border of Wisconsin state, runs southward, is nagivable at Portage City, and enters the Mississippi 4 miles below Prairie-du-Chien after a course of nearly 600 miles.

Wisconsin, University of, a co-educational, non-sectarian institution in Madison, Wis.; founded in 1838, and opened for instruction in 1851. It has four faculties, comprising Letters and Science, Law, Agriculture, and Engineering. In 1916 it had grounds, buildings, library, and equipment valued at $11,471,743, 495 instructors, and 5,131 students.

Wisdom of Solomon, The, the title of an apocryphal book, named in Greek Sophia Salomon, or Salomontos, generally placed sixth in order between "The Rest of Esther" and Ecclesiasticus. Its author professes that he is a king, and son of a worthy father, also a king. He himself prayed to God for wisdom and received it, wealth being superadded. God directed him to build a temple on the holy mount on the model of the tabernacle, from all of which it is obvious that the author claims to be Solomon, the son of David, King of Israel. The book is divided into 19 chapters. The first of these exhorts judges to love righteousness, and commends wisdom to them and others. The second denounces the unbelief of the ungodly, and traces to this source the wickedness of their lives. The third, fourth, and fifth point out that for the righteous there is a happy future, while an opposite destiny awaits the wicked. Chapters vi.-ix. highly commend wisdom. Portions of them resemble corresponding exhortations and descriptions in the Books of Proverbs. The advantages of wisdom are shown in chapters x.–xii. by illustrations taken from the history recorded in the Pentateuch. In chapters xiii.-xv. the folly of idolatry is exhibited in language of great beauty and force, and a philosophic explanation of its origin is attempted. The last four chapters contrast the providence which watches over the wise and the pious with the judgments which overtake idolaters and the ungodly, historical illustrations, as before, being derived solely from the Mosaic writings. Though the book is called "The Wisdom of Solomon," there is no reason to believe that he was its author. It was composed originally in Greek, probably by some Jew resident in Alexandria. It incorporates words from the Septuagint version of Isaiah iii: 10; xliv: 20 (about 284–246 B. C.) and therefore was subsequent to that date. The Apostle Paul was evidently acquainted with this book. It was at one time attributed to Philo, but critics now believe that it was written earlier than his era. Its more probable date was 150 to 50 B. C., or more approximately 120–80 B. C. If these dates are nearly correct, then Wisdom is the most ancient Jewish book except Daniel, in which the doctrine of rewards and punishments in a future state is clearly set forth; but it differs from Daniel in teaching the immortality of the soul, without reference to the resurrection of the body. It is the first book which identifies the serpent which tempted Eve with the Devil. No one can study the Book of Wisdom without entertaining high respect for its author, and deriving profit from his ethical teachings.

Wisdom Tooth, the popular name for the third molar in each jaw. They appear between the ages of 17 and 25, when a person may be presumed to have attained some degree of experience or wisdom.

Wise, Daniel, an American clergyman; born in Portsmouth, England, Jan. 10, 1813; came to the United States in 1832. He was editor of "Zion's Herald" at Boston, Mass., and various Sunday-school publications, and published a great number of works on varied subjects, mostly under the pen-names of "Francis Forrester" and "Lawrence Lancewood." He died Dec. 19, 1898.

Wise, Henry Alexander, an American statesman; born in Drummondtown, Va., Dec. 3, 1806; was educated at Washington College, Pa.; admitted to the bar in 1828; member of Congress in 1833–1843; minister to Brazil, under President Tyler, in 1844–1847; and Democratic governor of Virginia in 1856–1860. He opposed secession, but in 1861 joined the Confederate army as Brigadier-General. After the war he resumed the practice of law in Richmond, Va., and died there Sept. 12, 1876.

Wise, Henry Augustus, an American naval officer; born in Brooklyn, N. Y., May 12, 1819; entered the navy as midshipman in 1834, and rose to chief of the bureau of ordnance in

1866. Under the pseudonym of "Harry Gringo," he wrote "Tales for the Marines"; "Captain Brand of the Centipede"; etc. He died in Naples, Italy, April 2, 1869.

Wise, Isaac Mayer, a Jewish rabbi; born in Bohemia, April 3, 1819, settled in New York city in 1846. He resided in Cincinnati, O., after 1854, and became president of the Hebrew Union College. He was a leader of the reform movement in American Judaism; and besides editing the "Israelite," a weekly journal, he wrote extensively. Died in 1900.

Wise, Peter Manuel, an American alienist; born in Clarence, N. Y., March 7, 1851; was graduated at the Medical Department of the University of Buffalo in 1872; appointed a commissioner to locate and plan the State Insane Asylum for Northern New York in 1882; became president of the New York State Commission on Lunacy in 1896; Professor of Psychiatry at the University of Vermont in 1891–1895. Died in 1907.

Wisner, George Y., an American civil engineer; born in West Dresden, N. Y., July 11, 1841; was graduated at the University of Michigan; served in the government survey on the Mississippi river and on the Great Lakes in 1865–1880, and on surveys of the Mississippi, Illinois, and Des Plaines rivers in 1880–1884. He was next superintendent of the 10th and 11th United States Lighthouse districts. In 1887 he established a private practice. He died in 1906.

Wistar, Caspar, an American physician; born in Philadelphia, Pa., Sept. 13, 1761; received a classical education; was graduated at the Medical Department of the University of Pennsylvania in 1782; spent several years in England and Scotland; and returning to the United States in 1787 he began practice in his native city. He was Professor of Chemistry and the Institutes of Medicine at the College of Philadelphia in 1789–1792. In the latter year that institution was united with the Medical Department of the University of Pennsylvania, and he was there Adjunct Professor of Anatomy, Midwifery and Surgery in 1792–1808; then became Professor of Anatomy and held the chair till his death. He was the first to show that the posterior portion of the ethmoid bone was attached to the triangular bones. He died in Philadelphia, Pa., Jan. 22, 1818.

Wistar, Isaac Jones, an American penologist; born in Philadelphia, Pa., Nov. 14, 1827; received a collegiate education; and served in the Civil War as Brigadier-General of volunteers in 1862–1865. Subsequently he accepted the presidency of the Academy of Natural Sciences of Philadelphia; was inspector of the Eastern Penitentiary of Pennsylvania in 1892–1896; founded the Wistar Institute of Anatomy and Biology; was president of the State Board of Charities of Pennsylvania. Died in 1905.

Wistaria, a genus of plants having pinnate leaves and flowers in terminal racemes, the pod leathery. W. frutescens, a native of Virginia, Illinois, and other parts of North America of similar climate, found chiefly in marshy grounds, attains the height of 30 feet, and has beautiful racemes of fragrant bluish-purple flowers. W. chinensis or consequana, a native of China, has larger flowers in pendulous racemes, and branches 90 feet long.

Wister, Annis Lee (Furness), an American translator; born in Philadelphia, Pa., Oct. 9, 1830; married Dr. Caspar Wister; died in 1908.

Wister, Owen, novelist, b. in Philadelphia, July 14, 1860. He graduated from Harvard, qualified for a lawyer, but devoted himself to literature. His chief work is "The Virginian" (1902).

Witchcraft, supernatural power which persons were formerly supposed to obtain by entering into a compact with the devil. The compact was sometimes express, whether oral or written, when the witch abjured God and Christ, and dedicated herself wholly to the evil one; or only implied, when she actually engaged in his service, practised infernal arts, and renounced the sacraments of the Church. The express compact was sometimes solemnly confirmed at a general meeting at which the devil presided, and sometimes privately made by the witch signing the articles of agreement with her own blood, or by the devil writing her name in his

"black book." The contract was sometimes of indefinite duration, at other times for a certain number of years.

The witchcraft delusion in the latter part of the seventeenth century is one of the darkest blots on American colonial history. Originating in the hysteria of imaginative children it became a general popular madness, fostered, it is sad to say, by the highest educational authority in America, the faculty of Harvard College. Good men and women were tortured and executed, and even a clergyman, the Rev. Stephen Burroughs, a man of exemplary life, was hanged on imaginary charges. When the public conscience became aroused to the magnitude of the hideous wrong, and the General Court of Massachusetts appointed a day of fasting and supplication in atonement for the sacrifice of innocent lives, even then a circular was issued in the name of Harvard College, inviting reports of "apparitions, possessions, enchantments," etc. A monument was erected, some years ago, to Rebecca Nourse, one of the victims, on the hill where she perished, and her descendants have an organization which holds annual meetings in memory of their hapless ancestor.

The delusion broke out in 1692 in the family of the Rev. Mr. Parris, a minister at Salem, Mass. A company of girls had been in the habit of meeting a West Indian slave to study "black art." They suddenly began to act mysteriously, bark like dogs, and scream at something unseen. An old Indian servant was accused of bewitching them. The excitement spread and impeachments multiplied. A special court was formed to try the accused, and as a result the jails rapidly filled, and many were condemned to death. It was unsafe to express a doubt of a prisoner's guilt. Fifty-five persons suffered torture, and 20 were executed.

Witch Elm, or **Wych Elm,** a large tree 80 to 100 feet high; the trunk with an occasional girth of 50 feet. Indigenous in the N. of England and in Scotland. Called also the Scotch or mountain elm.

Witherspoon, John, an American educator; born in Yester, Haddingtonshire, Scotland, Feb. 5, 1722. He became president of Princeton College in 1768; delegate for six years from New Jersey to the Continental Congress; and a signer of the Declaration of Independence. He died near Princeton, N. J., Sept. 15, 1794.

Witte, Serge Julievich, Russian statesman, born at Tiflis, July 29, 1849. His father was a Dutch storekeeper. Witte was educated in Persia and at Odessa Univ.; worked as a journalist; entered railway service; became traffic manager; received a govt. finance position; became Director of Imperial Railroads, 1888; Minister of Finance; Chancellor and Prime Minister; and was created Count 1905, after effecting the Treaty of Portsmouth. Died March 12, 1915.

Wittekind, or **Widukind, the** leader of the Saxons, who, driven from Westphalia by Karl the Great, annihilated the Frankish army on the Suntelgebirge in 782, during Karl's absence in Spain. A war of retaliation ensued, and after defeat at Osnabruck, Wittekind was forced to enter on negotiations, whose issue was that in 785 he accepted baptism in the imperial camp at Attigny, in Champagne. Karl, it is said, made him Duke of the Saxons and lord of Engern, and from his castle of Babilonie, near Lubeck, he exercised a mild and righteous sway till 807, when he fell in battle with Gerold, the Swabian duke.

Wittenberg College, a coeducational institution in Springfield, O.; founded in 1845 under the auspices of the Lutheran Church.

Witthaus, Rudolph August, an American toxicologist; born in New York city, Aug. 30, 1846; was graduated at Columbia University in 1867 and at the Medical Department of the University of New York in 1875; was Professor of Toxicology and Chemistry at Cornell University, and held similar chairs in other institutions. He became noted as an expert in poisons in connection with many murder cases. He died Dec. 23, 1915.

Witwatersrand (Anglicized White Water Range), the name of a height of land in the Transvaal, South Africa, running S. and S. W. of Pretoria, and located between the Klip and Vaal rivers on the S. and the Limpopo on the W. It is about 100

miles long and extends nearly E. and W., with lat. 26° S. In 1886 gold was first discovered here, and since that date the region has developed into the most famous gold mining district in the world. The Boer war paralyzed its development for a time, and since the war scarcity of labor and heavy taxation have been unfavorable factors. Prior to the discovery of gold the land was thought to be good for nothing but to pasture cattle. It comprises an elevation on a barren plateau, and consists of sandstones, shales, conglomerates, and quartzites. At first mining was carried on along the surface but later shafts were sunk to a depth of 2,000 feet. A conservative estimate places the value of gold in this formation at $3,500,000,000, which is 10 times greater than the gold and silver product of the celebrated Comstock Lode. In this region are coal and iron.

Wloclawek, or **Vloclavsk,** a large city of Republic of Poland, in the Government of Warsaw, on the Vistula river, 30 miles N. W. of Plock, and midway between that town and Thorn, Germany. It is the only point in Russian Poland where the railroad to the center and S. part of the country connects with the Vistula river, and is about 20 miles from the Prussian border. It has a fine cathedral, sugar and textile factories, and a considerable trade in grain. Pop. about 30,000.

Woburn, a city in Middlesex co., Mass.; on the Boston & Maine railroad; 10 miles N. W. of Boston; is the largest leather manufacturing center in New England; also has a considerable output of shoes, chemicals, dynamos, and lamps; was the birthplace of Benjamin Thompson (Count Rumford). Pop. (1930) 19,434.

Woden, or **Odin,** the principal deity of the German and Scandinavian mythologies, common to all Teutonic peoples. Woden, while not the creator, is the ruler of heaven and earth, the king of the deities. His celestial residence is the palace Heidskialf, in Asgard, from whence his two black ravens, Hugin (Thought) and Munin (Memory), are sent forth daily to gather and bring in tidings of all that is taking place in earth and heaven. He is also the god of war, holding his court in Valhalla, whither brave warriors pass after death to revel in joys of battle and the hunt, such as they loved best on earth. Woden became the wisest of the gods by the aid of a draught from Mimir's fountain, though in doing so he lost the sight of one eye.

Wodrow, Robert, a Scottish clergyman and historian; born in 1697; died, 1734. He was educated at Glasgow University, and became minister of the parish of Eastwood, Renfrewshire, in 1703, where he remained all his life. He published "The History of the Sufferings of the Church of Scotland" from the Restoration to the Revolution (two vols., 1721), and wrote a series of Scotch ecclesiastical biographies, the MSS. of which are preserved in Glasgow University. From these there have been edited for the Maitland Club, by Rev. Dr. Leishman, "Lives of the Reformers and most Eminent Ministers of the Church of Scotland" (3 vols., 1834–45). The Wodrow Society has published "Wodrow's Correspondence" (1842–43), edited by Rev. Thomas McCrie.

Wofford College, a coeducational institution in Spartansburg, S. C.; founded in 1854 under the auspices of the Methodist Episcopal Church.

Woiwode, an old Slavonic name for a general, afterward used as a title of civil rank and authority. The princes of Wallachia and Moldavia were called woiwodes, and this title was also applied at an early period to the Polish kings.

Wolf, the vernacular name of certain species of the genus Canis. The common wolf (C. lupus) has very much the appearance of a large, long-legged, bareboned dog, with a long tail, which hangs over its haunches instead of being curled upwards. Distinguishing characters are to be found in the lank body, length of the snout in proportion to the head, sloping forehead, oblique eyes, and erect ears. The fur varies according to the climate with respect both to its nature and color. A full-grown wolf measures 5 feet 5 inches in length, whereof 18 inches belong to the tail; its height is 33 inches, and its weight over 100 pounds. The wolf's natural voice is a loud howl, but when confined with dogs it will learn to bark.

Wolf, Edmund Jacob, an American clergyman; born in Rebersburg, Pa., Dec. 8, 1840; was graduated at the Pennsylvania College, Gettysburg, in 1863, and then served with the Union army during the remainder of the Civil War. Subsequently he studied theology; was ordained in the Lutheran Church; and became Professor of New Testament Exegesis and Church History at the Theological Seminary, Gettysburg, Died in 1905.

Wolf, Theodore Frelinghuysen, an American physician; born in Kenvil, N. J., in 1847. His professional writings include works on tetanus and anæsthesia. He died June 14, 1915.

Wolf Dog, a variety of Canis familiaris, used for hunting; formerly abundant in Norway and Sweden, but now almost entirely confined to Spain. It is of large size, little, if any, smaller than the mastiff, nose pointed, ears erect, hair long and silky, usually white, with large patches of brown; tail curled over the back.

Wolfe, James, an English military officer; born in Kent, Jan. 2, 1727. From the first he was bent upon following his father's profession of arms; in 1742 he received an ensign's commission. In 1743 he took part in the famous battle of Dettingen, as adjutant of his regiment; in 1744 he obtained his captaincy; and in 1745–1746 he served against the Scotch, being present at the battles of Falkirk and Culloden. From 1749 to 1757, with occasional interruptions, such as a six months' residence in Paris, he was engaged in garrison duty in Scotland and England. In the mismanaged expedition against Rochefort (1757) Wolfe acted as quartermaster-general. The total failure of the operations brought disgrace to nearly all concerned; but it became known that had Wolfe's counsels been followed the result would almost certainly have been different. Pitt's attention was now decisively drawn to him as an officer of whom great things might be expected; and in 1758, with the full rank of colonel, he was appointed to the command of a brigade in the expedition against Cape Breton. A brilliant success was obtained.

Pitt was organizing his scheme for expelling the French from Canada; and the expedition which had for its object the capture of Quebec, the enemy's capital, he confided to Wolfe's command. Advanced to the rank of Major-General, and commanding 9,000 men, Wolfe sailed from England on Feb. 17, 1759, and on June 26, landed his forces on the Isle of Orleans, opposite Quebec. The system of defense adopted by his adversary Montcalm, was such as to offer no point of advantage. At last, having dropped down the river, and scaled the cliffs at a point insufficiently guarded, at daybreak of Sept. 13, Wolfe found himself on the Plains of Abraham, where Montcalm had no choice but to give battle. After a short struggle the French were driven from the field in complete rout; Montcalm was one of 500 killed; the capitulation of Quebec followed five days after; and its fall decided the fate of Canada. Wolfe died in the hours of victory, Sept. 13, 1759. In person he led the right till, thrice wounded, he was carried to the rear. He lived to hear the cry, "They run; see how they run!" and expired with the words, "Now God be praised, I will die in peace." His body was taken home and buried in Greenwich church, and a monument was erected to him in Westminster Abbey.

Wolf Fish, also named sea cat and swine fish, is a teleostean fish, allied to the blenny, and deriving its name from a peculiar development of the teeth, which consist of front incisors, above shelved, interlocking in an exact manner, three rows of palatal grinding teeth, and two rows of similar teeth in the lower jaw. It may attain a length of four or five feet. The fish feeds on mollusks and crustaceans. An allied species is found off the American coasts.

Wolfhound, or **Borzoi,** a breed of dog first imported in numbers into England from Russia, about the year 1885. In shape the borzoi is like a gigantic greyhound, though covered with a soft coat about the length of a deerhound's. In Great Britain the breed has become very popular owing to the peculiar grace and beauty of the animal. Though supposed to be able to attack and kill a wolf, in disposition and appearance the Russian wolfhound is so excessively gentle that doubts have been cast on its powers.

Wolfram von Eschenbach, next to Walther von der Vogelweide the greatest of Middle High German poets. He was poor and with a family, and could neither read nor write; but knew French and was of noble birth, which enabled him to frequent the court of Hermann of Thuringia. His chief works were three epic poems: "Parzival" (about 1210); "Titurel" (about 1210?), left unfinished; and "Willehalm" (begun before 1216), left unfinished; both afterward completed by other hands. He died about 1220.

Wollaston, William Hyde, an English chemist; born in East Dereham, England, Aug. 6, 1766; was educated at Cambridge, took the degree of M. D., practiced as a physician in London, but finally devoted himself to scientific research. He was the inventor of the goniometer, an instrument for measuring the angles of crystals, and the discoverer of palladium and rhodium and the malleability of platinum. He died in London, England, Dec. 22, 1828.

Wolseley, Garnet Joseph, Lord, an English military officer; born near Dublin, Ireland, June 4, 1833; entered the army as ensign in 1852; served with distinction in the Crimea, and was wounded at the siege of Sebastopol; engaged in the siege and capture of Lucknow during the Indian mutiny of 1857–1858; and was employed in 1860 in the Chinese war. He was dispatched to Canada in 1861, and again in 1867, having received command of the Red River expedition, which he carried to a successful issue. Three years afterward Wolseley was appointed to the command of an expedition to punish the King of Ashantee, and after a brief campaign he entered Coomassie (February, 1874), and received the submission of the king. After the defeat of a British force by the Zulus in South Africa in 1879 he was dispatched as high commissioner, but before his arrival the Zulus had been defeated at Ulandi. His next command was in Egypt in 1882, where his forces successfully stormed the lines of Tel-el-Kebir and captured Arabi Pasha. His army rank was raised to that of General. His next appointment was as Adjutant-General of the forces. When the Mahdi subdued the Sudan, and held General Gordon prisoner in Khartum, Wolseley was dispatched in 1884 with a relief expedition. He concentrated his forces at Korti, and sent a column across the desert to Khartum, but before its arrival the place had fallen; was commander of the forces in Ireland, 1890–95; then became Field Marshal and Commander-in-Chief of the British army; resigned as Commander-in-Chief in 1900. He died March 25, 1913.

Wolsey, Thomas, Cardinal, an English prelate; born in Ipswich, England, in March, 1471; was educated at Magdalen College, Oxford, where he took his degrees as a scholar of distinction. After quitting the university he was appointed to the parish of Lymington in Somerset. Then he became a private chaplain to the Archbishop of Canterbury, chaplain to Henry VII., and latterly Dean of Lincoln. When Henry VIII. became king the advancement of Wolsey was rapid. Successively he was appointed Canon of Windsor, Dean of York, Bishop of Lincoln, Archbishop of York, and his nomination as cardinal in 1515 and Pope's legate in 1518 completed his ecclesiastical dignities. In 1515 he was also appointed lord-chancellor of the kingdom. Part of his immense revenues he expended in display, and part more laudably for the advancement of learning. Wolsey lost the royal favor when he failed to obtain from Pope Clement a decision granting the king's divorce from Catharine of Aragon. He was banished from court, stripped of his dignities, found guilty of a præmunire, and sentenced to imprisonment. Finally he was arrested at Cawood Castle on a charge of high treason, and on his way to London as a prisoner died in Leicester Abbey, Nov. 29, 1530.

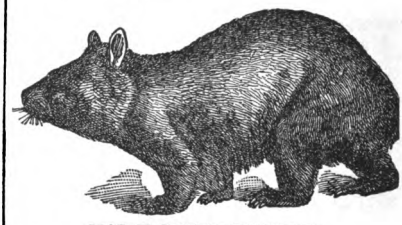
Woman's Christian Temperance Union. The National Woman's Christian Temperance Union was organized in Cleveland, O., in 1874. It is now organized in every State in the Union, and in every Territory. There are about 12,000 local unions, with a membership and following, including the children's societies, of about 500,000. The Woman's Christian Temperance Union has 40 distinct departments of work, presided over by

as many women experts, in the National society, and in nearly every State. All the States in the Republic except one have laws requiring the study of scientific temperance in the public schools, and all these laws were secured by the Woman's Christian Temperance Union; also the laws forbidding the sale of tobacco to minors. The first police matrons and most industrial homes for girls were secured through the efforts of this society, as were the refuges for erring women. Laws raising the age of consent and providing for better protection for women and girls have been enacted by many Legislatures through the influence of the department for the promotion of social purity. The World's Woman's Christian Temperance Union was founded through the influence of Frances E. Willard in 1883, and already has auxiliaries in more than 50 countries and provinces. The white ribbon is the badge of all the Woman's Christian Temperance Union members, and is now a familiar emblem in every civilized country.

Woman's College, an educational institution for women in Baltimore, Md.; founded in 1888 under the auspices of the Methodist Episcopal Church.

Woman's Relief Corps, an organization created by the mothers, wives, daughters, and sisters of Union soldiers of the Civil War of 1861–1865, for the purpose of aiding and assisting the Grand Army of the Republic, and to "perpetuate the memory of their heroic dead," to "extend needful aid to the widows and orphans," to "cherish and emulate the deeds of our army nurses," and to "inculcate lessons of patriotism and love of country among our children and in the communities in which we live." The organization is composed of departments, which are subdivided into corps, as well as detached corps in several States where no departments exist. There are about 35 departments, 2,715 corps, and 161,761 members.

Wombat, in zoölogy, a burrowing marsupial from Australia and Van Dieman's Land, and the islands of Bass' Strait. It is from two to three feet long, with a short tail; of clumsy form, with stout limbs and a blunt muzzle; coat thick, of long, coarse, brownish-gray, woolly hair; head large, flat, broad, with small eyes and ears; fore feet with five and hind feet with four digits; soles broad and naked. The dentition resembles that of the Rodentia, especially in the chisel-like incisors. The wombat is nocturnal in habit, a vegetable feeder, digging up roots with its claws. It is of small intelligence, but is gentle, and capable of domestication to a limited extent. It is hunted for its flesh, which is highly esteemed and is said to resemble pork.



HAIRY NOSED WOMBAT.

Women, National Council of, in the United States a central council of women, to which all National societies organized for any purpose whatsoever come to hear what other National societies are doing on other lines. They counsel together as to any reform, or movement, in which all might cooperate. The council has a cabinet, and is fashioned on a plan similar to the Senate of the United States. Twenty National societies are represented in the council, with a membership of 1,200,000, the largest representative body in the world. Mrs. Mary Lowe Dickinson, of New York City (1839–1914), and one of the most graceful writers in the United States of the class of literature which aims for the betterment of humanity, was president of the organization for several years before her death.

Women's Clubs, General Federation of, in the United States, an organization incorporated in 1892, and composed of over 2,675 women's clubs, having a membership of 155 000 women in the United States and foreign countries. The purpose of the Federation is declared in its articles of incorporation to be "to bring into communication with one another the va-

rious women's clubs throughout the world, that they may compare methods of work.

Women's Suffrage, the right of women to exercise equally with men the voting privileges of citizenship. It is a part of the movement to secure for women a legal, political, and social equality with men that resulted from an article on the subject by John Stuart Mill in the "Westminster Review" in 1851; that has since been agitated in most of the civilized parts of the world; and that developed into an aggressive campaign in England, which reached its most acute stage in 1909-1910. Many of the extreme agitators, who became known as "Suffragettes" and "Suffragists," besieged with petitions the House of Commons, Premier Asquith, the Lord Mayor of London and other public officials, and made demonstrations for which a considerable number were imprisoned.

The history of Women's Suffrage in the United States dates from the ratification of the Constitution by New Jersey when that state on entering the Union admitted women to vote. This right was withdrawn, however, seventeen years later. In 1915, the first bill for women's suffrage was defeated in the House of Representatives by vote of 204 to 174. The suffrage amendment to the Constitution (Article 19) was ratified by the necessary two-thirds votes of the states on August 18, 1920, when the state of Tennessee voted for the amendment, making for ratification the necessary thirty-six states. In Great Britain women have full suffrage for all public offices excepting members of Parliament; in Australia, Finland, Iceland, Isle of Man, and New Zealand, full suffrage; in Ontario, Nova Scotia, Manitoba, Quebec, British Columbia, and the Northwest Territory, all in Canada, and in Denmark and Sweden, municipal suffrage; and in France, if in commerce, for judges of commerce.

Wood, the hard, solid stem of any plant; lignin, the principal constituent of all vegetable life. Wood thus only differs from vegetable fibers—cotton, flax, hemp, etc.—in its physical condition. Woody stems are divided into two great classes, according to the manner in which they grow. The first and most important class is the exogens or exogenous stems, so called on account of the annual increments being added on the outside of the stem just within the bark, and the layers of growth are seen in such stems in a series of concentric circles, each ring of which represents the growth of one year. This class embraces all the trees of temperate climates, and, indeed, the greater part of all tree life. The second class—endogenous stems—shows no rings of annual growth, but a cross section exhibits a series of dark spots, more or less closely studded, and always more densely packed toward the outer circumference.

For trade purposes wood is classified under two heads, as soft wood and hard wood, the leading representatives of the former being the numerous varieties of pine, and the latter embracing the oaks, beeches, ash, birch, and furniture woods generally. Dye woods form a class by themselves, and belong to a quite distinct trade. Wood before it can be properly used for any structural purposes, must be seasoned by some means of drying, so as to withdraw the vegetable sap from it. The common and best way of seasoning is to stack the wood in the open air, but this process is tedious, especially with large logs and hard wood. Submergence in water for some time hastens the seasoning operation, and steaming or boiling also renders wood quickly fit for employment, though it weakens the timber. A process of desiccation in heated chambers is practiced for the seasoning of thin planks and boards used by joiners and cabinet-makers.

Besides its multifarious application as timber in engineering, shipbuilding, carpentry, and cabinet-making, wood has numerous important minor uses. It is a most valuable fuel, and the source of wood tar, pyroligneous acid, wood naphtha, and charcoal; and certain kinds of wood are now extensively pulped for employment in paper-making. The total editions of great New York newspapers are said to consume ten acres of wood in one day.

Wood, Charlotte Dunning, pen name, Charlotte Dunning, an American novelist; born in Poughkeepsie, N. Y., in 1858.

Wood, Edward Stickney, an American chemist; born in Cambridge, Mass., April 28, 1846; was graduated at the Medical Department of Harvard University in 1867; studied medicine and chemistry in Europe; and was appointed Professor of Chemistry at the Medical Department of Harvard University in 1876. He died in 1905.

Wood, Fernando, an American politician; born in Philadelphia, June 14, 1812. In 1820 he removed to New York city and entered business as a shipping merchant. He became identified with political organizations, being elected to Congress in 1841 on the Democratic ticket, serving one term. In 1850 he retired from business and in 1854 was elected mayor of New York; introduced various reforms and was reëlected almost without opposition. The riot troubles of 1857 prejudiced many citizens against the municipal administration and he was defeated for reëlection, but was again mayor in 1859. In 1861, when secession was under discussion, he recommended that New York should secede and become independent. He was elected to Congress in 1863 and 1867. He died in Washington, D. C., Feb. 14, 1881.

Wood, George, an American author; born in Newburyport, Mass., in 1799. He was clerk in the War Department (1819–1822), and later chief of a division in the United States Treasury Department. He published: "Peter Schlemihl in America"; "Marrying Too Late"; etc. He died in Saratoga, N. Y., Aug. 24, 1870.

Wood, James Frederick, an American clergyman; born in Philadelphia, Pa., April 27, 1813; was educated in England; returned to the United States and entered the banking business. In 1836 he went to Rome to study for the priesthood. After his ordination in 1844 he went to Cincinnati and became an assistant rector of the cathedral and afterward pastor of St. Patrick's church. In 1857 he became Bishop of Philadelphia, where he completed the magnificent cathedral; also laying the foundation at Overbrook of the Seminary of St. Charles. He was created archbishop in 1875. He was especially hostile to the introduction of political issues from other countries into the United States. He died June 20, 1883.

Wood, John Seymour, an American author; born in Attica, N. Y., Oct. 1, 1853; was graduated at Yale College and at Columbia Law School. He has written several books.

Wood, Leonard, an American military officer; born in Winchester, N. H., Oct. 9, 1860; was graduated at the Harvard Medical School in 1884. He was appointed 1st lieutenant and assistant surgeon in the United States army in 1886, and saw active service under General Miles in the Southwestern Territories in the operations against the Apache Indians; was medical and line officer of the expedition, and received a medal of honor for conspicuous gallantry. A short time before the outbreak of the Spanish-American War in 1898, he was detailed as physician at the White House. Having recruited the 1st United States Volunteer Cavalry popularly known as the "Rough Riders," he entered the war as its colonel. He was later promoted Brigadier-General of volunteers, and at the battle of San Juan Hill commanded one of the two brigades of Gen. Joseph Wheeler's cavalry division. After Santiago's surrender he was made military commander of the city, July 20, 1898, and afterward of both city and province. He was appointed a Major-General, U. S. V., in 1899, and a Brigadier-General, U. S. A., in 1901; was promoted Major-General, U. S. A., in 1903; and was Chief of Staff, U. S. A., in 1910–14. He commanded the Military Division of the Philippines in 1906–08; the Department of the East in 1908–09 and 1914–17; then transferred to Charleston, S. C. In 1920 he was a prominent candidate for the Republican presidential nomination. Appointed Governor-General of the Philippines in 1921.

Wood, Thomas John, an American military officer; born in Munfordville, Ky., Sept. 25, 1823; was graduated at the United States Military Academy in 1845; served with General Taylor in the Mexican War; served on the Texan and Kansas frontier for 12 years; and through the Civil War in the Army of the Cumberland. He was promoted Major-General of volunteers in 1865; and mustered out of the volunteer service Sept. 1, 1866. He was brevetted 1st lieutenant, U. S. A., for

gallant and meritorious conduct in the battle of Buena Vista, Brigadier-General for Chickamauga, and Major-General for Nashville. Died in 1906.

Wood, Walter Abbot, an American inventor; born in Mason, N. H., Oct. 23, 1815; early turned his attention to the perfection of farming implements; and in 1850 introduced the Mauny harvesting machine with original improvements, of which in 1851 he made and sold nearly 200. He continued to improve the mowers and reapers and in 1884 disposed of 48,300 machines. His improvements were covered by about 30 patents. He was a member of Congress in 1879–1883. He died in Hoosick Falls, N. Y., Jan. 15, 1892.

Wood-Allen, Mary, an American author; born in Delta, O., Oct. 19, 1841; was graduated at the Ohio Wesleyan University in 1861, and at the Medical Department of the University of Michigan in 1875. She then studied abroad; practised medicine for a time in Newark, N. J., and later removed to Ann Arbor, Mich. Her publications include "Man Wonderful in House Beautiful"; "Child Confidence Rewarded," etc. D. 1908.

Wood Ant, an exceedingly common species. Found in woods, where it heaps up a great mass of vegetable fragments, beneath which the nest is continued in a great extent of subterranean passages and chambers. The wood ant possesses no sting, but has the power of ejecting its acid secretion to keep enemies at a distance.

Wood Baboon, the Cynocephalus leucophæus, allied to, but smaller than the mandrill. It is a native of the coast of Guinea. Called also cinereous baboon, drill, and yellow baboon.

Woodberry, George Edward, an American poet; born in Beverly, Mass., May 12, 1855; was graduated at Harvard College in 1877; was Professor of English Literature in Nebraska State University in 1877–1878 and 1880–1882; in Columbia College in 1892. Besides numerous articles in magazines and reviews, he wrote: a "History of Wood Engraving"; "Makers of Literature," etc.

Woodchuck, a small American burrowing rodent, ranging from the Carolinas to Hudson Bay, and W. from the Atlantic coast to Missouri, Iowa, and Minnesota. The woodchuck is a vegetable feeder, and may be easily tamed; called also the ground hog.

Woodcock, an American game bird, a great favorite with hunters, and regarded as one of the choicest dishes for the table. Like other game birds, it is protected by law at certain seasons. One of the most interesting traits about the woodcock is the fact of its occasionally conveying its young through the air; which is done by only one or two other birds. When the parent bird wishes to convey her young one from a place of danger to one of safety, the tiny thing is gently pressed between the feet and against the breast, the aid of the bill only being resorted to when the burden has been hastily taken up. The well-known woodcock of the Old World is a larger bird, but resembles the American species in plumage and habit, and like it, is esteemed for the table.

Wood Engraving, the art of engraving designs on wood. It differs from copper and steel plate engraving by having the parts to be printed on the paper in "relief." While plates are printed from the engraved lines by a laborious and necessarily slow process wood engravings, having the object to be represented on the surface, in the manner of a type, may be printed along with the matter they are intended to illustrate on the ordinary printing machine. This, of course, is an important point in the illustration of books, on the ground of cheapness and expedition. Another advantage wood engravings possess is that they can be multiplied to any extent by means of the electrotype process.

The invention of wood engraving, like that of gunpowder, has been claimed for the Chinese, whose books have been printed from engraved wood blocks for ages. It has been asserted that the art of cutting figures in relief, and printing impressions of them on paper, was known and practised by that nation as early as the reign of the renowned Emperor Wu-Wang (1120 B. C.). It was not, however, till the beginning of the 15th century that we find any evidence of the existence of wood engraving, as we now understand it. It appears to have been used in Germany at that time for printing

playing cards and figures of saints. The earliest print of which any certain information can be obtained was discovered in one of the most ancient convents of Germany pasted within the cover of a Latin MS.; it represents St. Christopher carrying the infant Saviour across the ferry, and is dated 1423. It is a work of some merit, notwithstanding its apparent roughness; the infant Saviour and the drapery of the saint being drawn with considerable skill and vigor.

Previous to the invention of movable types whole books of text were also engraved in wood, and the impressions had evidently been taken by rubbing on the back of the paper, instead of steady pressure, as in the printing press.

The psalter printed by Fust and Schoffer at Mainz in 1457 is illustrated with initial letters engraved on wood, and printed in two colors, blue and red, which have been called "the most beautiful specimens of this kind of ornament which the united efforts of the wood engraver and the pressman have produced. They have been imitated in modern times, but not excelled." It is worthy of note that, though printed upward of 400 years ago, the freshness and purity of the colors remain unimpaired.

As printing spread, the publication of illustrated books became general in Germany and Italy, and reached England in 1476; in which year Caxton published the second edition of the "Game and Playe of the Chesse," with figures of the different pieces. The first attempt at something finer than simple lines appears in the frontispiece to the Latin edition of Breydenbach's "Travels," printed at Mainz by Erhard Reuwich, 1486. It is by an unknown artist, is an elaborate and really very beautiful specimen of the art, and is also remarkable as being the first engraving introducing "cross hatching" to represent dark shadows.

About the beginning of the 16th century a complete revolution in the art of wood engraving was accomplished by the genius of Albert Durer. His productions exhibit not only correct drawing, but a knowledge of composition and light and shade, and attention to the rules of perspective, which, with the judicious introduction of subordinate objects, elevated them to the rank of finished pictures. There has been considerable discussion as to the probability of Durer having also engraved his drawings. Most of the best authorities on the subject agree in the negative.

During the first half of the 16th century the publication of books illustrated with wood engravings still increased, and prevailed to a greater extent than at any other time, with the exception of the present day. The most remarkable work published at this time was the "Dance of Death" issued at Lyons in 1538. The original edition of this curious work contained 41 engravings, representing the struggle between Death, generally in the form of a skeleton, and different individuals, such as the Pope, the emperor, a judge, monk, doctor, duchess, old man, etc. The drawings, which are characterized by great vigor and skill, are generally understood to have been executed by Hans Holbein. John Daye published almost the only illustrated books of the time in England, notably Queen Elizabeth's prayer book, which contains a tolerably well executed portrait of Her Majesty. There is no certain knowledge about any of the artists or engravers, though John Daye is supposed to have engraved some of his blocks himself. At this time also the practice of printing wood engravings in colors from different blocks became somewhat common, though the attention of artists in that line was mostly confined to ornamental subjects.

From the beginning of the 17th century the art fell into a state of great neglect, not apparently for want of engravers, for woodcuts of a certain kind were always produced, but for want of artists able or willing to make drawings worthy of preservation.

It was not till the genius of Thomas Bewick was brought to bear on it that wood engraving received that impetus which has made it one of the most important of the illustrative arts. Bewick's most important works are his "History of British Quadrupeds" (1790) and of "British Birds" (1804); all the quadrupeds and almost all the birds were drawn and engraved by himself. The birds especially are executed with a truthfulness and skill which has rarely if ever been equalled.

These works are also famous for their collection of tailpieces, which display an infinite amount of humor and pathos. He entirely abandoned the elaborate system of "cross hatching" which prevailed so much in the works of the older engravers, and produced his light and shade by the simplest possible means. Since Bewick's time wood engraving has continued to flourish without interruption.

The closing quarter of the 19th century was an important period in the history of wood engraving, from the rise of what has been called the American school, which has had a considerable effect and many followers in England. It is typified in many of the finer illustrated magazines published in the United States and England, and much of their work is very beautiful.

Woodford, Stewart Lyndon, an American lawyer; born in New York city, Sept. 3, 1835; served with gallantry in the Civil War, retiring with the rank of Brigadier-General of volunteers by brevet; on the cessation of hostilities he resumed the practice of law; in 1866 was elected lieutenant-governor of New York on the ticket with Reuben E. Fenton; in 1872 member of Congress from the 3d Congressional District (Brooklyn); in 1877 appointed United States Attorney for the Southern District of New York. In 1897 he was appointed minister to Spain, which post he held till the beginning of the Spanish-American War in 1898. He died Feb. 14, 1913.

Woodhull, John Francis, an American scientist; born in Westport, N. Y., July 2, 1857; was graduated at Yale University in 1880; became Professor of Physical Science at the Teachers' College, Columbia University, in 1888; and a lecturer on university extension.

Woodlark, a bird differing from the skylark in its smaller size, its shorter tail, more distinctly marked breast, and a conspicuous light-colored streak extending over each eye and the ear coverts. Its note has neither the power nor variety of the skylark, but is superior in quality of tone and is longer in duration. The nest is composed of grasses, moss, and hair, placed on the ground; eggs usually four or five, white covered with little red-brown spots.

Woodmen of America, Fraternity of Modern, a fraternal benefit society organized in 1883; had (1930) 15,000 local camps and a membership of 1,081,242.

Woodmen of the World, a fraternal benefit society founded in 1891; had a membership (1916) of 770,631.

Wood Nymph, a fabled goddess of the wood; a dryad. In zoölogy, the common name of the beautiful lepidopterous insects comprised in the genus Eudryas.

Woodpecker, in ornithology, the popular name of the old Linnæan genus Picus, now greatly divided. Woodpeckers have a slender body,



GREEN WOODPECKER.

powerful beak, and protrusile tongue, which is sharp, barbed, and pointed, and covered with a glutinous secretion derived from glands in the throat, this coating being renewed every time the tongue is drawn within the bill. The tail is stiff and serves as a support when the birds are clinging to the branches or stems of trees. Woodpeckers are very widely distributed, but abound chiefly in warm climates. They are solitary in habit, and live in the depths of forests. Fruits, seeds, and insects constitute their food, and in pursuit of the latter they exhibit

wonderful dexterity, climbing with astonishing quickness on the trunks and branches of trees, and when, by tapping with their bills, a rotten place has been discovered, they dig vigorously in search of the grubs or larvæ beneath the bark.

Wood Pigeon, a bird distributed generally over Europe. Varieties more or less spotted with white often occur, and perfect albinos are sometimes met with. The food of the wood pigeon consists of corn and grain, beech-mast, peas, tares, acorns, the young shoots of turnip tops, and spring-sown corn; and as these birds make no return to the farmer by destroying his insect foes, their rapid increase is a source of grave anxiety to agriculturists.

Wood Pulp, a preparation of wood used in the manufacture of paper and in other industries. There are two kinds of wood pulp, one known as ground or mechanical, and the other as chemical. The first is the cheapest and is used chiefly for making newspaper and common wrapping paper stock. In this kind spruce wood is most commonly employed, because it is cheap and gummy, the latter quality being valuable in that it adds much to the tenacity of the material made from the pulp.

Chemical wood pulp is made by cutting up spruce and poplar logs into small chips, which are then placed, with a liquor, in enormous tanks to be digested. Book and magazine papers are now made from chemical wood pulp. The pulp is also put to many other uses. Basins, buckets, cups, and many small articles are made from it and it is employed in the so-called "paper car wheel." During the year ended June 30, 1917, the United States imported 699,475 tons of wood pulp, valued at $42,461,994, the principal source being Canada, 443,133 tons, value $22,172,343. Of the total quantity, 270,107 tons, valued at $7,018,404, was mechanically ground pulp. The second largest source was Sweden, 204,824 tons, value $16,413,636. Despite this large importation, the United States suffered a paper famine.

Woodrow, James, an American educator; born in Carlisle, England, May 30, 1828. He edited the "Southern Presbyterian Review" in 1861–1865, and after 1865 was editor of the "Southern Presbyterian." He became professor in various Southern colleges, and president of South Carolina College in 1891. He died Jan. 17, 1907.

Woodruff, Edwin Hamlin, an American lawyer; born in Ithaca, N. Y., Sept. 2, 1862; was graduated at Cornell University School of Law in 1888, and admitted to the bar in the same year; was instructor of English at Cornell in 1888–1890; acting Professor of Law at Leland Stanford University in 1893–1896; then became Professor of Law at Cornell.

Woodruff, Wilford, an American Mormon; born in Northington (now Avon), Conn., March 1, 1807; was ordained a Mormon priest in 1833; was one of the Mormon emigrants to Salt Lake City; became one of the 12 apostles in 1839; and later made missionary tours covering over 150,000 miles. In 1887 he was elected president of the Mormon Church. For 22 years he held a seat in the Utah Legislature. He died in Salt Lake City, Utah, Sept. 3, 1898.

Woods, Mrs. Kate (Tannatt), an American writer; born in Peekskill, N. Y., in 1838. Among her books are: "The Duncans on Land and Sea"; "Six Little Rebels"; "Espanola," etc.

Woods, Katharine Pearson, an American writer of fiction; born in Wheeling, W. Va., Jan. 28, 1853. Her published works include: "The Crowning of Candace"; "The True Story of Captain John Smith," etc.

Woods, William Burnham, jurist; born in Newark, O., Aug. 3, 1824; graduate of Yale, became a lawyer, Speaker of the Ohio legislature, maj.-gen. in the Union army, Chancellor of Alabama 1868, circuit judge, and 1880 judge of the U. S. Supreme Court. Died May 14, 1887.

Woodward, Robert Simpson, physicist and educator, born in Rochester, Mich., July 21, 1849; graduate of Univ. of Mich. 1872, was associated with the U. S. Lake Survey, U. S. Transit of Venus Commission, U. S. Geological Survey, U. S. Coast and Geodetic Survey, wrote many valuable books, and in 1893 became professor, and later dean, of Columbia Univ. N. Y. C. In 1905 he became Pres. of the Carnegie Institution.

Woodworth, Samuel, an American journalist; born in Scituate, Mass., Jan. 13, 1785. During the War of 1812–1815 he edited, in New York city, "The War," a weekly journal, and "The Halycon Luminary," a Swedenborgian monthly. He was one of the founders of the New York "Mirror" (1823–1824); edited the "Parthenon" (1827); wrote a romantic history of the war, called "The Champions of Freedom" (2 vols. 1816), and several dramatic pieces. His political works were published in two volumes in 1861. His famous poem is "The Old Oaken Bucket." He died in New York city, Dec. 9, 1842.

Wood Wren, a species often confounded with the willow wren, from which, however, it may be distinguished by its larger wings, a broad streak of sulphur-yellow over the eye and ear coverts and its plumage, which is green above and white below. It differs, also, from most of the warblers in eating neither fruit nor berries, but subsisting on insects or their larvæ. The nest is oval, domed, and placed on the ground; eggs six, transparent, white, thickly spotted with dark purplish-brown.

Wool, the fleecy covering or pile of the sheep, and some other animals, as the alpaca, the vicugna, and some species of goats. Wool is generally divided into three classes, long, short, and coarse; and these are divided into subordinate classes according to fineness. Wool is divided into pulled and clipped fleece wool. Pulled wool is pulled by the roots from the skin of the dead animal, the clipped is shorn from the living one. Short-staple wool is used in cloth manufacture, and is frequently called clothing wool. To this class belong the Saxon and Silesian wool of Germany, a portion of the wool of Australia, of the Cape of Good Hope, Buenos Ayres, Russia, Canada, and the bulk of the wool produced in the United States. Short-staple wool may vary in length from 1 to 3 or 4 inches; if it be longer it requires to be cut or broken to prepare it for manufacture. The felting property of wool is well known. Hat making depends entirely on it. The wool of which hats are made is neither spun nor woven, but locks of it being thoroughly intermixed and compressed in warm water cohere and form a solid tenacious substance. Cloth and woolen goods are made from wool possessing this property. But the long wool of which stuffs and worsted are made is deprived of this felting process. This is done by passing the wool through heated iron combs, which takes away the laminæ or feathery part of the wool, and approximates it to the nature of silk or cotton. Long-staple wool is also called combing wool, and delaine wool. To this class belong the long lustrous, down-combing English wool of Leicester, Lincolnshire, and Cotswold; the soft-combing wool of Rambouillet of France; the soft long-staple wool of Australia; the cheviot of Scotland, and the combing wool of Canada, Ohio, Kentucky, Pennsylvania, New York, Maine, and other parts of the United States. The French and Australian are most esteemed for women's dress goods, such as merinos, cashmeres, thibets, and the like; the cheviot for Scotch tweeds, and the English usually for worsted goods. Long wool may vary in length from 3 to 8 inches. The shorter combing wools are principally used for hose, and are spun softer than long-combing wools; the former being made into what is called hard and the latter into soft worsted yarn. To the third class, the coarse-staple wools which are adapted for carpets, belong the Donski, and other coarse Russian wool, the native South American, Cordova, Valparaiso, native Smyrna, and other wool.

In sorting wools there are frequently found 8 to 10 different species in a single fleece; and if the best wool of one fleece be not equal to the finest sort it is thrown to a second, or third or fourth, or still lower sort, of an equal degree of fineness with it. The relative value of each varies according to the greater demand for coarse, fine, or middle cloths. The softness of the fiber is a quality of great importance. It is not dependent on the fineness of the fiber, and consists of a peculiar feel, approaching to that of silk or down. The difference in the value of two pieces of cloth

made of two kinds of wool equally fine, but one distinguished for its softness and the other for the opposite quality, is such that with the same process and expense of manufacture, the one will be worth from 20 to 25 per cent. more than the other. In clothing wool the color of the fleece should always approach as much as possible to the purest white, because such wool is not only necessary for cloths dressed white, but for all cloths that are to be dyed bright colors, for which a clear white ground is required to give a due degree of richness and luster and evenness of shade. Whiteness of fleece is of less importance in the long-combing than in clothing wool, provided it be free from gray hairs. Sometimes the fleece has a dingy brown color, called a "winter stain," which is a sure indication that the wool is not in a thoroughly sound state. Such fleeces are carefully thrown out by the wool sorter, being suitable only for goods that are to be dyed black. The fineness of heavy-combing wool is not of so much consequence as its other qualities.

The art of forming wool into cloth and stuffs was known in all civilized countries, and in very remote ages. Woolen cloths were made an article of commerce in the time of Julius Cæsar and are familiarly alluded to by him. They were made in England before A. D. 1200, and the manufacture became extensive in the reign of Edward III. (1331). The policy of England toward the American colonies was directly intended to discourage and repress manufactures of all kinds, those of woolen goods included. The actual result was that the domestic manufactures of coarser or "home-made" cloths became very widely spread and considerable, and the importations of foreign cloths were proportionally small. The supply of wool appears to have been large, and it was mostly worked up and disposed of within the colonies. The report of Alexander Hamilton on manufactures, in 1791, speaks of a mill for cloths and cassimeres in operation at Hartford, Connecticut. In 1794 there was a woolen factory in Newbury, Mass., and in the same year a carding machine for wool was put in operation in Pittsfield, Mass. President Madison's inaugural suit of black broadcloth was made at Pittsfield in 1804. The principal centers of the woolen industry in the United States are in New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, and Pennsylvania.

The wool industry in the United States comprises wool pulling, wool scouring, wool shoddy, woolen and worsted goods, and a variety of other fabrications. In all, the entire manufacturing industry was represented by 989 plants, paying $229,367,000 wages, and having an output valued at $1,070,043,000 in 1927. On Jan., 1930, the number of sheep on farms was estimated at 48,913,000 and their value over $350,000,000.

Woolly Rhinoceros, probably the best-known form of the extinct rhinoceroses, specimens having been found imbedded in ice. The skin was without folds and covered with hair and wool; there were two horns, the anterior one being of remarkable size, and the nostrils were separated by a complete bony partition. The geographical range of the woolly rhinoceros was over the N. latitudes of Europe and Asia, but, unlike the mammoth, it did not cross Bering Straits.

Woolman, John, an American Quaker preacher and anti-slavery writer; born in Northampton, N. J., in August, 1720. His writings contain the earliest protest published in America against the slave trade. His works include: "Some Considerations on the Keeping of Negroes," "Considerations on Pure Wisdom," etc. He died in York, England, Oct. 5, 1772.

Woolsack, the name given to the seat of the Lord Chancellor of England in the House of Lords, whose essential portion is a large square bag of wool without either back or arms, and covered with red cloth, the whole forming a kind of cushioned ottoman, standing near the center of the chamber. It is believed that woolsacks were placed in the House of Lords in the time of Edward III. to remind the peers of the importance of England's staple trade. In 1621 it was declared in the standing orders of the House of Lords that "the Lord Chan-

cellor sitteth on the Woolsack as Speaker to the House," not in his judicial capacity.

Woolsey, Sarah Chauncey, pen name Susan Coolidge, an American author; born in Cleveland, O., in 1845. She was a popular writer, especially for children. Writings include: "What Katy Did" and "A Little Country Girl." She died in 1905.

Woolsey, Theodore Dwight, an American educator; born in New York city, Oct. 31, 1801; was graduated at Yale College in 1820; studied law and later theology; was tutor at Yale in 1823–1825; licensed to preach in 1825; studied in Europe in 1827–1830; was Professor of Greek at Yale from 1831 to 1846; and then its president till 1871. In 1871–1881 he was president of the American company of revisers of the New Testament. He died in New Haven, Conn., July 1, 1889.

Woolson, Mrs. Abba Louisa (Goold), an American lecturer and author; born in Windham, Me., April 30, 1838. She lectured on literary, social, historical, and dramatic subjects; and besides contributing to periodicals published: "Women in American Society," and "Dress as it Affects the Health of Women," a series of lectures.

Woolson, Constance Fenimore, an American novelist and poet; born in Claremont, N. H., March 5, 1848. Her principal books are: "Castle Nowhere," "Jupiter Lights," "Horace Chase." She died in Venice in January, 1894.

Woolwich, a former town of Kent, England, now a metropolitan borough of London, on the Thames, 8 miles below London Bridge. It stretches about 3 miles along the river, and owes its importance to the great arsenal, which has a circumference of 4 miles, and consists of gun and carriage factories, laboratory, ordnance departments, etc. Pop. (1921) 140,389.

Woonsocket, a city of Providence Co., R. I., 16 miles N. W. of Providence, and 40 miles S. W. of Boston. It is an industrial center with cotton and woolen factories, machine-shops, rubber-works, iron-foundries, etc. Pop. (1930) 49,376.

Woorali Poison. See CURARI.

Wooster University, a coeducational institution in Wooster, Ohio; founded in 1869 under the auspices of the Presbyterian Church.

Wootz, a superior steel from the East Indies, imported into Europe and America for making the finest classes of edge-tools.

Worcester, a city in Worcester co., Mass.; at the source of the Blackstone river; 44 miles W. of Boston. It is built largely in a valley and on several hills, comprises fifteen villages, is the second city in population of the State, of which it is approximately the geographical center. The city is well laid out with broad, regular, and well shaded streets.

Worcester is said to manufacture a greater variety of articles than any other city in the United States.

In 1925 there were 518 manufacturing plants employing 31,142 wage earners, paying $42,330,499 for wages and $105,395,787 for raw materials, and yielding products having a combined value of $210,461,220. The main manufactures were: ice machinery and parts, $13,322,272; metal working machinery, $11,147,569, and foundry and machine shop products, $8,014,235. Among the other important manufactures were cotton goods, electrical machinery, boots and shoes (other than rubber), worsted goods, woolen goods, tools, etc. The assessed property value in 1916 was $182,334,979 (real, $134,509,500; personal, $37,825,479); net public debt $7,979,391.

Worcester has an area of 38 square miles; 218 miles of streets, of which 24 miles are paved; a system of waterworks costing $6,715,637, with 285 miles of mains, and an average daily consumption of 12,320,891 gallons; and a sewer system covering 228 miles. The streets are lighted by gas and electricity. There is a public school attendance of nearly 25,208 pupils, and annual expenditures for public education of over $983,600. The maintenance of the city government costs annually about $5,735,000. The city contains Clark University, Worcester Academy (Bapt.), the Worcester Polytechnic Institute, College of the Holy Cross (R. C.), the Massachusetts State Normal School,

also the Highland Military Academy.

Worcester was founded in 1674, but the settlers were soon driven away by the Indians. A second attempt was made to found a settlement in 1684, but after a few years the Indians again forced the whites to withdraw. The place was permanently established in 1713. It was incorporated in 1822, and chartered as a city in 1848. Owing to its location in the State, and in a rich agricultural region it is known as the "Heart of the Commonwealth." Pop. (1930) 195,311.

Worcester, Dean Conant, an American educator; born in Thetford, Vt., Oct. 1, 1866; was graduated at the University of Michigan in 1889; traveled in 15 of the Philippine Islands in 1887–1889; was instructor of animal morphology at the University of Michigan in 1893–1896, and became assistant professor in the latter year. In 1890–1892 he again traveled in the Philippines with Dr. F. S. Bourns, in a tour known as "the Menage Scientific Expedition." In January, 1899, he was appointed one of the United States commissioners to the islands to investigate and report on conditions there. In March, 1900, he was appointed a member of a Civil Commission, under the presidency of Judge William H. Taft, to "continue and perfect the work of organizing and establishing civil government already commenced by the military authorities, subject in all respects to any laws which Congress may hereafter enact." Civil government for the Philippines was inaugurated at Manila, July 4, 1901, and Mr. Worcester was Secretary of the Interior in 1901-13. Died, 1924.

Worcester, Edward Somerset, Marquis of, one of the earliest inventors of a steam engine; born about 1601. He was engaged in the service of Charles I. during the civil war, and was imprisoned in the Tower from 1652–1655. He afterward spent his time in retirement, and in 1663 published a book entitled, the "Scantlings of One Hundred Inventions," in which he first gave a description of the uses and effects of his steam engine. He died in 1667.

Worcester, Joseph Emerson, an American lexicographer; born in Bedford, N. H., Aug. 24, 1784. He was graduated at Yale in 1811, and very shortly began his life work as a dictionary maker. His first publication was: "A Geographical Dictionary, or Universal Gazetteer," followed by "Gazetteer of the United States," "Elements of Geography," "Sketches of the Earth and its Inhabitants," "Elements of History." In 1830 he published the "Comprehensive Pronouncing and Explanatory English Dictionary." In 1860 he published the great quarto, "Dictionary of the English Language" (illustrated), a standard authority wherever the English tongue is spoken. In 1820 he settled in Cambridge, Mass., and died there, Oct. 27, 1865.

Worcester Polytechnic Institute, a technical, non-sectarian institution in Worcester, Mass.; founded in 1865.

Worden, John Lorimer, an American naval officer; born in Sing Sing (now Ossining), Westchester co., N. Y., March 12, 1818; was appointed a midshipman in the navy, Jan. 10, 1834. At the beginning of the Civil War he was captured by the Confederates, and after being held seven months was exchanged. He was ordered to the command of John Ericsson's "Monitor," which left New York March 6, 1862. He arrived at Hampton Roads on the evening of the 8th, after the iron-clad "Merrimac" had destroyed the wooden frigates "Cumberland" and "Congress." On the morning of the 9th a memorable battle was fought by the "Merrimac" and "Monitor," the former of which was partly disabled and abandoned the fight, after several violent collisions with the "Monitor." He was promoted commander in 1862, captain in 1863; and commanded the iron-clad "Montauk" in the operations against Fort Sumter in April of that year. In June, 1868, he was promoted commodore, and in 1872 rear-admiral. He was superintendent of the Naval Academy at Annapolis in 1870–1874; commander-in-chief of the European squadron in 1875–1877; and was retired, at his own request, with full sea pay, Dec. 23, 1886. He died in Washington, D. C., Oct. 17, 1897.

Wordsworth, William, an English poet; born in Cockermouth, Cumberland, April 7, 1770. He was the son of an attorney and in 1787 was sent to St. John's College, Cambridge. He crossed to France in November, 1791, and exhibited vehement sympathy with the revolution, remaining in France for nearly a year. After his return, disregarding all entreaties to enter on a professional career, he published his "Evening Walk and Descriptive Sketches." Two years afterward he received a legacy of $4,500 from Raisley Calvert. With this sum and the consecrated helpfulness of his sister Dorothy he contrived to keep house for eight years, while he gave himself to poetic effort as his high "office on earth." Coleridge induced the Wordsworths to go to Alfoxden, in his immediate neighborhood. Here the two poets held daily intercourse, and after a year they published "Lyrical Ballads" (1798) in literary copartnership.

After a winter spent in Germany, Wordsworth and his sister settled at Grasmere (1799), where he proposed to write a great philosophical poem on man, nature, and society. Thenceforth his life was marked by a few incidents. Those worth noting are his marriage in 1802 with his cousin Mary Hutchison; a removal from Grasmere to Allan Bank in 1808; his appointment in 1813 to an inspectorship of stamps, and his removal to Rydal Mount; several journeys into Scotland and to the Continent; his acceptance of a D. C. L. degree conferred on him in 1839 by the University of Oxford; and his accession in 1843 to the laureateship on the death of Southey. Died in Rydal Mount, April 23, 1850.

Work, in physics, the act of producing a change of configuration in a system in opposition to a force which resists that change. For example, in raising a mass from the earth's surface, work is done in overcoming the attraction between the earth and the mass, and the work done is measured by the product of this weight into the distance through which it is overcome. To do this work, a certain force must be applied, a certain transformation of energy accomplished. The principle of work done is a particular statement of the doctrine of the conservation of energy, and was clearly enunciated, as far as it concerns pure dynamics, by Newton in the scholium to the third law of motion. This scholium is thus paraphrased by Thomson and Tait: "Work done on any system of bodies has its equivalent in work done against friction, molecular forces, or gravity, if there be no acceleration; but if there be acceleration, part of the work is expended in overcoming the resistance to acceleration, and the additional kinetic energy developed is equivalent to the work so spent." Mathematically interpreted, this theorem is an explicit statement of the dynamical principle first formulated by D'Alembert in 1742, and still known by his name — a principle which enables us to write down the equations of motion for any system for which the equations of equilibrium have been investigated. Any alteration in the configuration of a material system indicates that work is being done on it by the forces to which it is subject.

Work, Henry Clay, an American song writer; born in Middletown, Conn., Oct. 1, 1832. He was highly popular in three different classes of songs: of the War, as "Kingdom Comin'," "Wake Nicodemus," "Babylon is Fallen," "Marching Through Georgia"; of temperance, as "Father, Dear Father, Come Home with Me Now"; sentimental, as "My Grandfather's Clock," and "Lily Dale." He died in Hartford, Conn., June 8, 1884.

Working Drawing, a drawing or plan, as of the whole or part of a structure, machine, or the like, drawn to a specified scale, and in such detail as to form a guide for the construction of the object represented.

Workman, William Hunter, an American traveler. He wrote: "Sketches Awheel in Modern Siberia"; (with his wife, Fanny Bullock Workman) "In the Ice World of Himalaya" (1900).

World, in the widest sense, the universe; the whole system of created things (as contradistinguished from God). In the narrower sense it means the terraqueous globe.

Wormeley, Katharine Prescott, an American author, and translator; born in Ipswich, England, Jan. 14, 1830. She came to the United States in girlhood, and was engaged in the relief of Union soldiers during the Civil War. She was best known as a translator of Balzac's novels, and of the Duc de Saint-Simon's "Memoirs," and wrote: "The Other Side of War," "The United States Sanitary Commission," etc. Died in 1908.

Worms, a division of the animal kingdom, which may be taken to indicate (1) the class Annelida, the members of which have jointed bodies, and want true articulated appendages; and (2) such animals as the parasitic tapeworm, the nematoid worms, the thornheaded worms, and allied forms. A tapeworm differs from an ordinary worm in the compound nature of its body. Each "joint" or proglottis is a complete being having a set of generative organs. The following particulars may serve as a succinct account of the annelida or true worm. Two classes are included in the Arthropoda: Class 1 (Gephyrea).—In this class are included the various species of spoon worm (Sipunculoidea), small worm-like forms, which inhabit the sand of our coasts or seek protection in the cast-off shells of certain mollusca. They exhibit the essential annulose characteristics, the body being segmented, and the nervous system consisting of the typical ventral gangliated cord. Lateral appendages are wanting, as also are eyes and other organs of sense. A proboscis bearing the mouth, and surrounded by tentacles, is situated anteriorly, the posterior part of the body being comparatively thick and muscular. Class 2 (Annelida).—This class is as extensive as the preceding is limited. It includes the various kinds of worms. The body in general is distinctly segmented, each zone or segment being furnished with locomotive appendages. A detached segment of the body of a typical annelid consists of two halves or arcs, named from their position, the "dorsal" and "ventral" arcs. From the sides of each certain processes termed "parapodia" or "foot tubercles" arise, and of these, four exist to each segment, two borne by each arc of the segment. The tubercles on the dorsal arc are termed, from their position, "notopodia"; those of the ventral half, from their proximity to the nervous system, are known as "neuropodia." The terms "dorsal oar" and "ventral oar" are sometimes used synonymously with the above. Each "oar" or "parapodium" bears two distinct kinds of appendages: (1) bristles or "setæ," which form the bulk of the organ: (2) a soft tentacular filament, to which the name of "cirrhus" is applied. These organs materially assist locomotion. The head is generally differentiated from the other segments, and in many cases is furnished with eyes, antennæ and similar organs. The digestive system includes a mouth—provided, in some instances, with a series of jaws—a stomach, and intestine. The respiratory organs consist of skin-sacs or pouches, or of branchiæ or gills; while in the lower forms breathing is performed by the general surface of the body. The nervous system consists of the typical gangliated chain, the anterior ganglia showing a tendency to coalesce together, so as to form a rudimentary "cerebral" mass or brain.

Worms, as a disease, frequently inhabit the intestinal canal in children, and often aggravate or even give rise to gastric and intestinal disorders, while the irritation which they produce is frequently extended to the spinal cord, giving rise to convulsions or other formidable nervous symptoms. Though intestinal worms are more frequent in early life than in adult, no species or them are peculiar to infancy.

Worms, a town of Germany, in Hesse-Darmstadt; three-quarters of a mile from the left bank of the Rhine, 40 miles S. S. E. of Mainz. It is irregularly built, and is still in part surrounded with its ancient walls. The principal edifice in the town is the venerable cathedral (founded in the 8th century, completed and consecrated in 1101). The interior is 357 feet long, 87 feet wide (across the transepts 117 feet), and is very imposing from its grand simplicity. On the N. side of the cathedral is the site of the Bischophof or episcopal palace,

the seat of the diet of April, 1521. Outside the town stands the Liebfrauenkirche (dating from the 15th century). The finest monument in Worms is that to Luther, erected in 1868 at a cost of $85,000. Worms is one of the most historical towns of Germany. It was known to the Romans as Borbetomagus, and later as Augusta Vangionum, the capital of the Vangiones. It was destroyed by Attila and rebuilt by Chlodwig in 486. After the partition of the empire among the sons of Ludwig the Pious, Worms became a German free town under the protection of the Elector of the Palatinate. Already in 1255 it belonged to the Confederation of Rhenish towns, and it contained in the time of Friedrich Barbarossa 70,000 inhabitants. It was the seat of many Imperial Diets, most famous that under Karl V., which Luther made memorable to the world. In 1689 the town was ruthlessly destroyed by Melac and the young Duc de Crequi under the orders of Louis XIV. In September, 1792, part of it was levelled by the French and at the peace of Luneville in 1801 it was given to France. The peace of Paris in 1814 gave it back to Germany, and the Vienna Congress in 1815 to Hesse-Darmstadt. Pop. (1920) 44,390.

Wormseed, a seed which has the property of expelling worms from the intestinal tube or other open cavities of the body. It is brought from the Levant, and is the produce of a species of *Artemisia* (*A. Santonica*), which is a native of Tartary and Persia. In the United States the name is generally given to the seed of *Chenopodium anthelminticum.*

Wormwood, in botany, the genus Artemisia. The stem is one to three feet high, grooved, and angled; the leaves silky on both sides, twice or thrice pinnatified, dotted; the yellow flowers in racemes, the heads drooping, silky, the outer flowers fertile. It is wild in North America in various waste places, also in Continental Europe, the North of Africa and Great Britain.

Worship, a title or honor, used in addresses to certain magistrates, and others; the act of paying divine honors to the Supreme Being, or the reverence or homage paid to Him in religious exercises, consisting in adoration, confession, prayer, thanksgiving, and the like. The homage paid to idols or false gods by pagans; idolatry of inferiors. Obsequious or submissive respect; unbounded admiration; as hero worship.

Worsted, a variety of woolen yarn or thread, spun from long-staple wool which has been combed, and which in the spinning is twisted harder than ordinary. It is knit or woven into stockings, carpets, etc. The name is derived from Worsted, a village in England, where it is supposed to have been first manufactured. In the United States the woolen and worsted industries are usually classed as a single one, and the U. S. census on Manufactures in 1925 reported 503 plants, employing 67,056 wage-earners, paying $219,618,330 for raw materials, and yielding finished, manufactured products of a combined value of $361,524,034.

Wort, in chemistry, the saccharine extract obtained from malt, barley, and other grain, by mashing with water. It is a complex mixture of saccharine bodies, some existing in the grain and others formed in the process of brewing. It varies in quality.

Wörth, a village in Alsace, Germany; at the confluence of the Sauerbach and Sulzbach rivers; 10 miles S. W. of Wissembourg. It is celebrated as the place where the French on Aug. 6, 1870, met their first great defeat at the hands of the Germans in the Franco-Prussian War.

Worth, Charles, a French dressmaker; born in Bourne, Lincolnshire, England, in 1825. In 1846 he went to Paris, and started an establishment for the making of fashionable costumes. He was eminently successful as a designer of fashions, and his establishment became the leading emporium of fashion for Europe and the United States, employing 1,200 persons. Died in Paris, March 11, 1895.

Worth, William Jenkins, an American military officer; born in Hudson, Columbia co., N. Y., March 1, 1794. He received but a scanty

education, and on the breaking out of the War of 1812, he entered the army as a private soldier. He was appointed 2d lieutenant of infantry in 1813, was aide-de-camp to General Lewis the same year, and General Scott in 1814; and the same year received the brevets of captain and major for gallant conduct at the battle of Chippewa, July 5, and at that of Lundy's Lane, July 25, at which latter he was severely wounded. He was promoted major in 1832, and colonel in 1838. In 1841, he assumed the command of the Florida war, which he brought to a successful termination after several severe conflicts. At the outbreak of the Mexican War, he joined the command of General Taylor, and distinguished himself at the storming of Monterey. At the close of the war he was placed in command of the Southwest. He died in San Antonio, Tex., May 17, 1849. A monument was erected to his memory by the city of New York, where his remains are interred.

Worth, William Scott, an American military officer; born in Albany, N. Y., Jan. 6, 1840; joined the Union army in 1861; was promoted 1st lieutenant June 7, 1861; captain, Jan. 14, 1866; lieutenant-colonel of the 13th Infantry, Nov. 26, 1894; and colonel in September, 1898. He accompanied the army to Cuba, and during the assault on San Juan Hill, July 1, 1898, was severely wounded. He was promoted Brigadier-General, U. S. A., Nov. 2, 1898. He died at Clifton, Staten Island, N. Y., Oct., 1904.

Worthington, Henry Rossiter, an American inventor; born in New York city, Dec. 17, 1817; early engaged in mercantile business with his father; but in 1840 began a series of experiments with steam for the propulsion of canal boats. Soon afterward he devised a small steam pump to be used in the maintenance of the water supply in the engine boiler, and in 1841 patented an independent feed pump which developed into the direct-acting steam pump that he patented in 1849. Subsequently he built in Savannah, Ga., the first direct-acting compound engine ever used in waterworks; erected a large plant for the manufacture of pumping machinery; invented the duplex pump, and devised various improvements in steam and hydraulic machinery. He died in Tarrytown, N. Y., Dec. 17, 1880.

Wotherspoon, William Wallace, an American military officer; born in Washington, D. C., Nov. 16, 1850; was appointed a second lieutenant in the army, in 1873; promoted captain, 1893, major, 1901, lieutenant-colonel, 1904; graduated at the Army War College, 1905; Brigadier-General, 1907; Major-General, 1912; and retired Nov. 16, 1914. He was president of the Army War College in 1910–12, assistant to the Chief of Staff in 1912–14, Chief of Staff in 1914, and Superintendent of Public Works of the State in 1915-16.

Wound, a cut; a stab; a laceration; a breach of the skin and flesh of an animal, or of the bark and wood of a tree, or of the bark and substance of other plants, caused by violence or external force; injury; hurt. Injury; detriment; damage; as, a wound given to one's reputation.

In surgery, a solution of the continuity of a soft part of the body, effected by some external agent, and attended with a greater or less amount of bleeding. Wounds are of various kinds, and are generally distinguished as incised, lacerated, contused, and punctured. An incised wound is a simple division of the fibers made by a sharp cutting instrument. A lacerated wound is one in which the fibers, in place of being cleanly divided by a sharp instrument, are torn asunder by violence, the edges of the wound being in this case jagged and uneven. A contused wound is one made by a violent blow by some blunt instrument, the part being bruised as well as torn. A punctured wound is one made with a narrow pointed instrument. Wounds are dangerous, according to the extent of soft parts which they involve, the parts they occur in, and the state of health.

Wrack, a general term for the larger kinds of seaweed cast ashore by the waves, and applied in a special sense to the species of *Fucus,* which form the bulk of the wrack collected for manure, and for making kelp.

Wrangel Land, an island in the Arctic Ocean; lying N. of the E. extremity of the Asiatic coast, and inter-

sected by the meridian of lon. 180° E. It was seen by the Englishman Kellett in 1849, and again discovered by the American Long in 1867, and named after the Russian explorer Wrangel (1796–1870), who sought in vain to reach it in 1821–1823. It was first explored by the American expedition under Hooper and Berry in 1881. There seem to be other islands beyond it.

Wrangler, at Cambridge University, England, the name given to a student who is placed in the first class in the first or elementary portion of the public examination for honors in pure and mixed mathematics, commonly called the Mathematical Tripos. A student placed in the second class is called a Senior Optime, and one in the third class, a Junior Optime. Up to and including 1882, the student who took the first place in the Mathematical Tripos was termed the Senior Wrangler, and those who came next to him were termed Second, Third, etc., Wranglers; but now the general term is applied to him who takes the first place in Part I. of the Mathematical Tripos. A Wranglership is the honor conferred on those placed on the list of wranglers. Such disputations at Oxford are now merely formal.

Wren, a genus of birds, having a slender, slightly curved, and pointed bill; the wings very short and rounded; the tail short, and carried erect; the legs slender, and rather long. Their plumage is generally dull. They are abundant in the neotropical region, less common in the nearctic, palæarctic, and parts of the Oriental regions. They live on or near the ground, seeking for insects and worms among low brushes, and in other similar situations. The common or European wren is found in all parts of Europe, and in Morocco and Algeria, and in Asia Minor and Northern Persia. The common wren is more abundant in the N. than in the central and S. parts of Europe. It frequents gardens, hedges, and thickets. Its flight is not long sustained; it merely flits from bush to bush, or from one stone to another, with very rapid motion of the wings. It sometimes ascends trees, nearly in the manner of creepers.

The North American species of wren are numerous; but many of them are ranked under different genera. The house wren is larger than the European wren, being about five inches long. It is abundant in the E. parts of the United States. It is less shy than the European wren, and often builds its nest near houses, and in boxes prepared for it. The nests are made to fill the boxes; and to effect this a large mass of heterogeneous materials is sometimes collected. The song of the house wren is very sweet. The male is a very bold, pugnacious bird, readily attacking birds far larger than itself, as the bluebird and swallows, and taking possession of the boxes which they have appropriated for their nests. It even attacks cats when they approach its nest. The winter wren is so similar to the European wren that it is not easy to state a specific difference. It is common throughout North America, from Labrador to Louisiana, and partially migratory. Several other species, common in North America, all agree very nearly in their habits with the common wren.

Wren, Sir Christopher, an English architect; born in East Knoyle, Wiltshire, England, Oct. 20, 1632; was educated at Wadham College, Oxford; became a fellow of All Souls in 1653; was appointed Professor of Astronomy at Gresham College in 1657, and three years afterward was elected Savilian Professor of Astronomy at Oxford. He had been appointed by Charles II. to restore old St. Paul's, but after the great fire (1666) it became necessary to rebuild the cathedral. It was begun in 1675, and the architect saw the last stone laid by his son 35 years afterward. Among the other notable buildings which Wren designed are: The modern part of the palace at Hampton Court, the library of Trinity College, Cambridge, the hospitals of Chelsea and Greenwich, the churches of St. Stephen's, Walbrook; St. Mary-le-bow; St. Michael, Cornhill; St. Bride, Fleet street; as also the campanile of Christ Church, Oxford. In 1680 was chosen president of the Royal Society. From 1685 to 1700 represented various boroughs in Parliament. He died in Hampton Court, Feb. 25, 1723.

Wrestling, one of the most ancient forms of athletic exercise, and at one time the favorite pastime of the Greeks, especially during that period when Greece in civilization, military knowledge, and in the cultivation of arts and sciences stood head and shoulders above all other States of the civilized world. The Olympic Games, the great festival of the Greeks, which were instituted for the exhibition of various trials of strength and skill, included races on foot, and with horses and chariots, contests in leaping, throwing, boxing, and wrestling. In the games described by Homer valuable prizes were offered, but after the 7th Olympiad a single garland of leaves of the wild olive was substituted at Olympia as the only meed of victory. One of the great objects of the old classical wrestlers was to make every attack with elegance and grace under certain laws of a most intricate nature, and the game is described by Plutarch as the hardest working form of athletics.

Wright, Carroll Davidson, an American statistician; born in Dunbarton, N. H., July 25, 1840. After distinguished service in the Civil War, he was a member of the Massachusetts Legislature in 1871–1872; afterward chief of the State Bureau of Statistics, lecturer at Harvard University, United States Commissioner of Labor from 1885, and completed the 11th United States census; was Honorary Professor of Social Economics in the Catholic University of America; Professor of Statistics and Social Economics, Columbian University; and president of Clark College (Mass.) from 1902 till his death in 1909.

Wright, Elizur, an American insurance expert; born in South Canaan, Conn., Feb. 12, 1804. He was graduated at Yale in 1826; taught school, and was Professor of Mathematics in Western Reserve College in 1829–1833. He was identified with the Anti-Slavery movement in 1833; was editor of the newspapers "The Emancipator," and "Human Rights," and the quarterly "Anti-Slavery Magazine." He published several works on life insurance, and was insurance commissioner of Massachusetts. He wrote an introduction to Whittier's poems in 1844. Died in Medford, Mass., Nov. 21, 1885.

Wright, George Frederick, an American geologist; born in Whitelaw, N. Y., Jan. 22, 1838. He was a Congregational clergyman (1862–1872), and Professor of Harmony of Science and Revelation in Oberlin College. He was editor of the "Bibliotheca Sacra" after 1884.

Wright, Henrietta Christian, an American writer for the young. Her works include the "Golden Fairy Series," "Children's Stories of the Great Scientists," etc. Died in 1899.

Wright, Mrs. Julia (McNair), an American writer; born in Oswego, N. Y., May 1, 1840. Her books are anti-Catholic in tone, and include: "Priest and Nun," "Tales for the New Century," "The Heir of Athole," and other similar works. Died in 1903.

Wright, Luke E., diplomat; born at Memphis, Tenn., in 1847. He became a lawyer; Attorney-Gen. of Tenn., 1880-88; member of the Philippine Commission, 1900; Governor-Gen. of the Philippines, 1905; Ambassador to Japan, 1906-1907; Secretary of War, 1908-1909. He married a daughter of Admiral Semmes of the Confederate navy. Died, 1922.

Wright, Mrs. Mabel (Osgood), an American writer on nature; born in New York, in 1859.

Wright, Wilbur, an American aeronaut, born near Millville, Indiana, April 16, 1867. Both he and his brother, Orville, became interested as children in flying machines, but they did not begin serious work on a heavier-than-air machine until 1901. They had an experiment station at Kitty Hawk, North Carolina, and there a successful test flight, of a few seconds, was made in 1903. In spite of ridicule and many discouragements, the brothers worked on, keeping their plans and hopes to themselves. They deprecated exhibitions, attended by risk, especially Wilbur, the elder of the two, a quiet, reserved man whose very diffidence aroused interest and piqued curiosity. In 1905 Orville made a successful long-distance flight near Dayton, Ohio, the home of the brothers, and since then he has made many flights in the United States and abroad.

On October 6, 1908, in France,

Wilbur Wright made the first flight of more than one hour, with a passenger. It was abroad, and especially in France, that he first gained recognition. He patented the now famous Wright biplane in many foreign countries, as well as in the United States, and sold the United States government a machine for $30,000. Both he and his brother were awarded gold medals by the French Academy of Sciences in 1909. Toward the close of his life, Wilbur devoted much of his time to instructing others in the science and art of aviation—always cautioning them to avoid unnecessary risks—and in perfecting the Wright biplane. He died of typhoid fever, after a short illness, at Dayton, Ohio, on May 30, 1912. See AERONAUTICS.

Wright, William Burnet, an American clergyman; born in Cincinnati, O., April 15, 1836; was graduated at Dartmouth College, pastor of Presbyterian churches in Chicago, Boston, and Buffalo.

Writers' Cramp (sometimes called Scriveners' Palsy), a condition which occasionally follows the overstraining of groups of muscles, and is met with among those who are engaged in occupations which require the exercise of particular voluntary muscles of the upper and lower extremities of an excessive degree; as editors, clerks, telegraphers, dancers, etc. Writers' cramp is more rare among those who write and meanwhile compose, than among clerks and copyists; and the condition is, therefore, the result of an over-developed automatism.

Writing, the act or art of forming letters and characters on paper, wood, stone, etc., for the purpose of recording the ideas which the characters and words express, or of communicating them to others by visible signs. Anything written or expressed in letters; a book; a manuscript; any written composition; a pamphlet; an inscription.

Würtemberg, or **Württemberg,** Free State of German Republic; pop. (1925) 2,580,235. Except a few tracts in the S., the surface is hilly and even mountainous. In the W., the Schwarzwald, or Black Forest, forms part of the boundary, and the Alb or Rauhe Alp, forming part of the Franconian Jura, covers an extensive tract. About a third of the country is under forests, which consist chiefly of oaks, beeches, and pine. Of minerals, by far the most valuable are iron and salt, both of which are worked by the government. The present constitution dates from September, 1919. The supreme power is vested in the Landtag consisting of 150 members. It in turn appoints the State ministry which administers affairs. There is no exclusively established religion. Education is generally diffused; the center of the educational system is the University of Tubingen.

Würzburg, a town in the N. W. of Bavaria, Germany; on the Main; 60 miles S. E. of Frankfort. Its old fortifications have been demolished, and the site laid out in fine promenades, but it is still overlooked by the fortress of Marienberg, on a lofty hill outside the city. The most important edifices are the Romanesque cathedral, erected in the 10th century, with an interior highly enriched but much deteriorated by plaster decoration of the 18th century; the university, with various new buildings; the Julius hospital and school of medicine, and the royal palace (1720-44). Pop. (1925) 89,910.

Wu Ting-Fang, a Chinese diplomatist; born in Hsin-hui, district of Kwangtung, China; studied Chinese literature and classics together with English in Canton, and took a law course in England in 1874–1877. On his return to China he directed the construction of the first railroad in his native land; was the first secretary of the Chinese commission to negotiate with Japan in 1895; and was afterward a plenipotentiary to ratify the treaty. He was envoy extraordinary and minister plenipotentiary to the United States, Peru, and Spain in 1897–1902; to the United States alone in 1907–1909; then chief of Chinese representatives at the Hague Court of Arbitration. He made himself very popular while in the United States, and received the degree of LL. D. from several colleges.

Wyandotte (in Canada called Huron), an Indian tribe in North America belonging to the Iroquis fam-

ily. In the beginning of the 17th century they were settled on the E. shore of Lake Huron, but in a tribal war (1636) they were nearly exterminated. Part of the dispersed tribe settled at Ancienne Lorette in Lower Canada, where their descendants still remain. Only a small number are now settled on Indian reservations in the United States.

Wyandotte Cave, in Indiana, excels the Mammoth Cave in the number and variety of its stalagmites and stalactites, and also in some of its chambers, one being 350 feet long and 245 feet wide, containing a hill 175 feet high. This stupendous work of nature abounds in long avenues, pillared palaces; Monument Mountain, rising 175 feet high, while 75 feet above its crest stretches away the Grand Dome; the Pillar of the Constitution, an immense stalagmite, 75 feet in circumference and 30 feet high, which is without a parallel in the world. The cave has been explored for 23 miles, and there are many passages which have never been traversed.

Wyant, Alexander H., an American landscape painter; born in Port Washington, O., Jan. 11, 1836. His studies of autumn effects in American forests, and views of nature in the Adirondacks and along the Ohio river, made his fame more than continental. Died in New York city, Nov. 29, 1892.

Wyatt, Sir Thomas, an English courtier and poet; born in Allington Castle, Kent, England, in 1503; son of Sir Henry Wyatt, who stood high in favor with Henry VII., and later with his son. In 1515 he was entered at St. John's College, Cambridge, where he took his degrees of Bachelor and Master of Arts. In 1536 he was knighted and the next year he was made high sheriff of Kent. In 1541 he was rewarded with a grant of lands at Lambeth, and the year after he was named high steward of the king's manor at Maidstone. Among the accomplishments of Wyatt was that of verse, which he seems to have begun to cultivate early, and continued through life to practise. During his life he had acquired considerable reputation as a poet; and in 1557 his poems, with those of Surrey, were published. He died in Sherborne, Oct. 11, 1542.

Wyatt, Sir Thomas, surnamed The Younger (to distinguish him from the preceding, of whom he was the only son), an English soldier; born about 1520. After a wild and riotous youth, he raised a body of men at his own expense, and did good service at the siege of Landrecies (1544), and he continued in honorable service on the Continent till 1550. In 1554, when the Spanish match was in agitation, Wyatt, in coöperation with Lady Jane Grey's father, led the Kentish men to Southwark, after gaining considerable success over the royalists; but failing to capture Ludgate, he became separated from the main body of his followers, was taken prisoner, and soon after executed in London, April 11, 1554.

Wyclif, Wickliffe, or Wiclif, (the name is spelled in several ways), **John,** an English reformer; born in the village of Ipreswel (later Hipswell), Yorkshire, England, between 1315 and 1320. Of his childhood and youth no account has been preserved. He certainly had a remarkable university career; but all details are wanting till 1356, when we find him seneschal of Merton College. In 1361 he was master or warden of Balliol, and though in May of the same year he was appointed rector of Fillingham in Lincoln, the university continued for a long time the main seat of his activity. About four years later, Simon Islip, Archbishop of Canterbury, appointed him warden of the new foundation of Canterbury Hall, but after he began to denounce the errors of Romanism, and the conduct of the monks, he was expelled by order of the Pope in 1370.

Meanwhile he had become Professor of Theology. In 1374 he was one of the commissioners sent to Bruges to arrange a concordat, and about the same time he received from the king himself (Edward III.) the rectory of Lutterworth in Leicestershire. Summoned before the Convocation in 1377, he was saved from all danger by the high-handed protection of the Duke of Lancaster and his friends, who made their way into the assembly and rendered all judicial proceedings impossible; and though in the following year a formidable process was instituted against him by direct command of

Gregory XI., the papal commissioners were induced by the intercession of the Princess Joanna and the evident sympathy of the citizens to do no more than forbid him further to disseminate his obnoxious doctrines. But in the course of the following years he grew more and more estranged from the catholic creed, and his endeavors to propagate his opinions were of wider scope than before.

In 1378 the election first of Urban VI. and then of Clement VIII. produced a schism in the Church; each Pope condemned his rival as antipope, and Wyclif declared that they were both right, and that the papacy was Antichrist. His views were accepted by numerous disciples, and disseminated by preachers through the length and breadth of the land. The ecclesiastical authorities endeavored to suppress the movement by fair means and foul; but though many of its leaders were silenced, the great originator of the whole continued to the end boldly to bear witness to the truth.

The importance of his life work may be read in the religious history of Europe during the 15th and 16th centuries. In England the Lollards, as his followers were called, were driven gradually into the background, but their doctrines were taken up on the Continent by Huss, and continued potent in many ways till they were absorbed in the larger wave of the great Reformation. Wyclif's greatest contribution to English literature was his translation of the whole Bible from the Latin into English, which is as remarkable in point of language as the later version of Tyndale. Wyclif died at Lutterworth, Dec. 31, 1384.

Wyman, Robert Harris, an American naval officer; born in Portsmouth, N. H., July 12, 1822; entered the navy in 1837; was acting master on the frigate "Brandywine" in 1843–1846; and, attached to the Gulf Squadron during the Mexican War, took part in the siege and capture of Vera Cruz and the expeditions that captured Tuspan and Tampico. He was at the naval observatory in Washington. In the Civil War he commanded the "Yankee" and "Pawnee" and the Potomac flotilla in 1861; and the "Wachusett" on the Potomac and the "Santiago de Cuba" on blockading duty in 1862–1864. He became captain in 1866, commodore in 1872, and rear-admiral in 1878; was commander-in-chief of the North Atlantic Station in 1879–1882; and was selected chairman of the Lighthouse Board June 5, 1882. He died in Washington, D. C., Dec. 2, 1882.

Wyman, Walter, an American surgeon; born in St. Louis, Mo., Aug. 17, 1848; was graduated at Amherst College in 1870, and at the St. Louis Medical College in 1873; was made assistant surgeon in the United States Hospital Service in 1876, and became chief medical purveyor of the quarantine division in 1888; was appointed supervising surgeon-general of the United States Marine Hospital Service in 1891. On his recommendation the government set apart a large tract of land in New Mexico for a hospital whence all consumptive patients in the United States marine hospitals could be transferred. D. Nov. 21, 1911.

Wynne, Mrs. Madelene (Yale), an American artist and story-writer; born in Newport, N. Y., Sept. 25, 1847; the daughter of Linus Yale, inventor of the Yale lock.

Wyoming, a State in the Western Division of the North American Union; admitted to the Union July 10, 1890; State capital, Cheyenne; no. of counties, 21; area, 97,914 sq. m.; pop. (1920) 194,402; (1930) 234,597.

The surface of the State is very rugged, being diversified by mountains, valleys, plains, and plateaus, the latter covered with grasses of great nutrition and furnishing admirable pasture for live stock. The main range of the Rocky Mountains enters the State from the S. terminating in the Wind River Mountains, with an altitude of from 10,000 to 14,000 feet, and snow capped the entire year. The Shoshone Mountains extend N. of the Wind River range. Running S. from the N. boundary to the center of the State are the Big Horn Mountains. Other notable ranges are the Sweetwater, Rattle Snake, Medicine Bow, and Sierra Madre. The highest peak is Fremont's Peak, in the Wind River range, 13,790 feet. None of the streams are navigable in a commercial sense, but they furnish water for the irrigation and development of the sur-

rounding country. There are several important lakes, including Yellowstone Lake in Yellowstone Park, the N. W. corner of the State; Jackson's; Shoshone; Lewis; Madison, and others.

The mineral productions are quite extensive, including copper, gold and silver, coal, iron, oil, soda, and building stones. The oil belt extends entirely across the State from S. W. to N. E. Natural gas is said to exist at various points adjacent to the explored oil belt.

In 1928 the total value of all minerals produced was $20,889,000. There were produced 6,486,000 long tons coal; 491,000 long tons iron ore, and 21,415,000 obls. of petroleum.

In 1925 the value of all farm property was estimated at $240,396,413, vegetables, fruit and cereals were produced valued at $18,889,391. There were 3,306,000 sheep; 749,000 cattle; 171,000 horses; 134,000 swine; and 72,000 milch cows. The wool clip for 1929 was 26,000,000 lbs.

There were 8,548,234 acres of land in the state National Forest land. Numerous fish hatcheries to provide trout for the streams and the largest elk herds in the world are also in Wyo.

The estimates for the manufacturing industry in 1927 were as follows: 229 manufacturing plants, employing 5,577 wage earners, paying $9,066,000 for wages, $63,741,000 for raw materials and yielding products having a combined value of $85,368,000.

In 1928 there were 1,380 public elementary schools, with 2,333 teachers and 42,498 pupils. For higher education there were 154 public high schools with 598 teachers and 10,644 students, and the University of Wyoming with 85 professors and 1,020 students. The total expenditure for education in 1927–1928 was $7,092,430.

The state's revenue for the year of 1926–27 was $15,006,005 and the expenditure $8,186,274. The public debt was $1,909,000 and the assessed value of all property was $474,110,587.

The State officers are elected for a term of four years. The governor's salary is $6,000 per annum. Legislative sessions are biennial and are limited to 40 days. The legislature has 27 members in the Senate and 57 in the house, each of whom receives $8 per day. There is one Representative in Congress.

Judicial power is vested in a Supreme Court and District Courts in the first of which sit three justices elected at large for a term of eight years. There are seven District Courts each presided over by a judge elected for a six-year term. Local justice is administered by justices of the peace and counties are governed by commissions.

The greater part of the area of Wyoming was included in that of the Louisiana Purchase of 1802, though the W. section formed part of the Oregon settlement. It was organized as a Territory July 25, 1868, from what was then the S. W. portion of Dakota, the N. E. part of Utah, and from the E. part of Idaho, to which the name of Wyoming was given. This Territory was admitted to the Union as a State July 10, 1890. The oldest white settlement within its confines was Fort Laramie, on Platte river, which was made a fur trading post in 1834, rebuilt by the American Fur Company in 1836, sold by them to the United States and garrisoned as a fort in 1849. It was long an important base of operations against the Indians, though it is now abandoned. Settlement took place very slowly till recently, the Indians occupying the more fertile districts. As the latter were removed, settlement became more rapid. The N. W. corner of the State, remarkable for its natural beauties and wonders, has been set aside as the Yellowstone National Park.

Serious trouble has been caused during past years in Wyoming by the State game laws, to which the Indians are naturally unable to reconcile themselves. In the latter part of October and the beginning of November, 1903, severe fighting took place between the whites and Indians who had been killing game, in which several whites were killed.

Wyoming, University of, a co-educational, non-sectarian institution in Laramie, Wyo.; founded in 1887.

Wyoming Valley, a valley in Luzerne co., Pa., famous as the scene of a massacre following a battle of Tory and Indian invaders, on one side, and the American settlers on the other,

July 3, 1778. The American force was weak, nearly all the fighting men being away in the Continental army, and more than half of it was killed. The survivors took refuge in Forty Fort, where most of the families of the valley had gathered. The Tories, under Colonel Butler, offered unexpectedly easy terms of surrender, and the settlers went back to their homes, while the invaders were supposed to be leaving the valley. Against the commands of their white leaders the Indians remained, and, on the night of July 4, began massacring the inhabitants and burning the houses. All who could escape made their way into the Wilkesbarre Mountains and the swampy land beyond, where many of the women and children died. When peace was established and the Indians came under control, the surviving settlers returned. They were confirmed in the possession of the valley in 1787.

Wythe, George, a signer of the Declaration of Independence; born in Elizabeth City, Va., in 1726; was educated at William and Mary College; studied law and became eminent in that profession; was chosen to the Virginia House of Burgesses in which he became a leader. He was author of a paper remonstrating against the Stamp Act, which was adopted after being modified. In 1775 he was sent to the Continental Congress and affixed his name to the Declaration of Independence on July 4, 1776, as a representative of Virginia. He was made speaker of the Virginia House of Delegates in 1777, and the same year became a judge in the Court of Chancery of Virginia. He was Professor of Law at William and Mary College in 1779–1789, and a delegate to the Constitutional Convention of 1786. He died in Richmond, Va., June 8, 1806.

X

X, the 24th letter of the English alphabet. It is superfluous, as it represents no sound which cannot be expressed by other letters. Thus, when used at the beginning of a word it has precisely the sound of **z**; when occurring in the middle of a word it usually has the sound of **ks**, as in axis, taxes, foxes, etc.; it also has the same sound in some cases when terminating a word, as lax, wax, etc.; when it terminates a syllable, and more especially an initial syllable, if the syllable following it is open or accented, it frequently has the sound of gz, as in exhaust, exalt, exotic, etc. As an initial it occurs only in words of Greek origin.

Xanthochroi, fair whites; the name applied by Huxley to a population, in early times extending from Western and Central Asia into Eastern and Central Europe, and distinguished by yellow or red hair, blue eyes and fair complexion. The farthermost limit of the Xanthochroi N. is Iceland and the British Isles; S. W. they are traceable at intervals throughout the Berber country, and end in the Canary Islands.

Xanthos, in classical legend, Achilles' horse. It is related in the "Iliad" that being chided by his master for leaving Patroclos on the field of battle, the horse turned his head reproachfully, and told Achilles that he also would soon be numbered with the dead, not from any fault of his horse, but by the decree of inexorable destiny.

Xanthos of Lydia, a Greek historian; living about the 6th century **B. C.,** contemporary with Herodotus. He wrote a work called "Lydiaca," being a history of Lydia from heroic times down, and giving also a geographical description of the country; fragments of it have been preserved.

Xanthus, an ancient city of Asia Minor, in Lycia; on the Xanthus river; about 8 miles above its mouth.

Xantippe, wife of Socrates, and the typical female termagant or scold. She had probably some little acerbities of temper, and these must have been heightened by the peculiarities of her spouse, especially his indifference to the commonplace duty laid on the head of the house to make both ends meet. Socrates received her reproaches with such good humored indifference that we cannot wonder she sometimes resorted to other weapons beside her tongue; as on the occasion when she is said to have finished up a tirade by sousing the philosopher, though his remark, as he moved dripping from the scene, that when Xantippe thundered she watered, must have convinced her that here, too, she was powerless. Some authors have given Socrates a second wife, named Myrto

Xantippus, a Lacedæmonian general; went to the support of the Carthaginians in 255 **B. C.**; and defeated the Romans under Regulus at Tunes (now Tunis). Notwithstanding his services, the Carthaginians ordered the captain of his ship to throw him into the sea.

Xavier, Francisco, a Spanish missionary and saint of the Roman Catholic Church, usually styled the Apostle of the Indies; born of a noble family, whose family seat of Xavier lay to the N. W. of Pampeluna, April 7, 1506. At the College of Sainte

Barbe, in Paris, he attained while still young some importance as a lecturer on philosophy; but a friendship which he formed with his fellow-countryman Loyola, turned his attention in a new direction, and he became one of the first members of the Society of Jesus. In the early part of 1540, before the society had received papal approbation, he was chosen for the mission to India, and received the title of apostolic nuncio from Paul III. The rest of his life was consecrated with high-souled devotion to the work of an evangelist. The last two years of his life were spent in Japan, and he was on his way to China when he fell ill with fever. He expired Dec. 2, 1552.

Xenocrates, a Greek writer and philosopher; born in Chalcedon, in 396 B. C.; removed in early youth to Athens, where he joined Plato. He was for some years scholarch, or rector, of the Academy. His writings were numerous. He died in Athens, in 314 B. C.

Xenophanes, a Greek writer and philosopher; born in Colophon about the third or fourth decade of the 6th century B. C. Exiled from his Ionian home, he established himself at Elea in Southern Italy. He died at the age of 92, in Elea.

Xenophon, a Greek historian and philosopher; born about 430 B. C. At an early age he became a pupil of Socrates, and is said to have been saved from death by that philosopher at the battle of Delium. About the age of 40 he joined the expedition of the younger Cyrus against his elder brother, Artaxerxes Mnemon, King of Persia. After the battle of Cunaxa, and the treacherous massacre of the Greek generals, Xenophon played an important part in the adventurous retreat known in history as the "Retreat of the Ten Thousand"; and it was his courage and conduct that contributed mainly to its success. He afterward settled at Scillus, a small town near Olympia, in Elis, under Spartan protection, where he lived upward of 20 years. At last he was driven from his retreat at Scillus by the Eleans, and took refuge in Corinth. He died after 357.

Xerxes I., King of Persia; the eldest son of Darius and his second wife, Atossa; was appointed successor by his father, in preference to Artabazanes, his eldest son by his first wife, whose children were born before Darius became king. Darius died in the beginning of the year 485 B. C., in the midst of his preparations for a third expedition against Greece. Xerxes after having subdued the rebellious Egyptians, and appointed his brother, Achæmenes, governor, gave his whole attention to the completion of the preparations begun by his father, which occupied nearly four years. Immense hordes of men were gathered together from all parts of the vast Persian empire; an enormous fleet was furnished by the Phœnicians and other maritime nations subject to Persia; stores of provisions sufficient to support the immense army were collected at different points along the intended route of march. A bridge of boats, an English mile in length, under superintendence of Egyptians and Phœnicians, was built across the Hellespont. The bridge, however, was destroyed by a storm. Another bridge, consisting of a double line of boats, was built, and a canal was cut through Mount Athos, at the point of the peninsula of Acte, in Macedonia, on which the fleet of Mardonius had been wrecked in 492 B. C. The preparations were completed in 481 B. C., and in the autumn of the year Xerxes arrived at Sardis, where he wintered.

The following spring the vast assemblage began to march toward the Hellespont. It took seven days and nights to march across the bridge. After crossing the Hellespont, the march was continued along the Thracian coast toward Doriscus, on the Hebrus, where a halt was made on a large plain, and the army numbered. The fleet drew up near to Doriscus. According to Herodotus, the whole number of fighting men, military and naval, amounted to nearly 2,500,000, and the fleet consisted of 1,200 ships of war, besides 3,000 smaller vessels. These numbers were considerably increased during the march between Doriscus and Thermopylæ. Herodotus supposed that the number of people assembled on this

occasion would be considerably over 6,000,000. This immense force moved on without resistance till it reached Thermopylæ, where it was brought to a stand by the army of Leonidas.

Though the Greeks were entirely defeated and slain, it was not without heavy loss to the Persians. On the same day, and on the third day after, the Persian fleet, which had previously suffered severely from a storm, was defeated with heavy loss by the Greeks off Cape Artemisium, in Eubœa. Xerxes continued his march on to Athens through Phosis, which he laid waste, and Bœotia, whose inhabitants joined him, with the exception of those of Platæa and Thespia, which cities he burned. A detachment which he sent to attack Delphi met with a signal defeat. When Xerxes arrived at Athens (in the summer of 480, three months after crossing the Hellespont) he found the city deserted, the Athenians having sent their families to Trœzen, Ægina, and Salamis, Athens was destroyed. Meantime the two fleets had sailed round from Eubœa, and taken up their positions in the narrow strait between Salamis and the Attic coast, where the famous naval battle of Salamis took place (September, 480 B. C.). Xerxes witnessed the fight from a lofty throne which he had caused to be erected on a slope of Mount Ægialeus. He was apparently confounded at the unexpected and inglorious result of all his mighty preparations to subdue Greece, and fled under the escort of 60,000 men. Little more is known of him, except that in 465 B. C. he was murdered.

Ximenes de Cisneros, Francisco, a Spanish cardinal and statesman; born in Tordelaguna, Castile, in 1436. He studied at the University of Salamanca. In 1455 he went to Rome, where he pleaded the cause of his countrymen in the consistorial courts with such success that he attracted the attention of the pontiff. He returned in 1461 with an expectative, which gave him a right to the first ecclesiastical preferment in a certain see that should fall vacant. A suitable office did fall vacant in 1473, but Carillo, Archbishop of Toledo, wished to fill it with a creature of his own. Ximenes refused to surrender his rights, whereupon the enraged prelate shut him up in prison for six years. Ximenes refused to yield, and at last attained his rights. He was appointed guardian of the convent of Salzeda, in 1492 chaplain to Queen Isabella, and in 1495 Archbishop of Toledo. On May 17, 1507, he was appointed cardinal, and when Ferdinand died in 1516 he ruled as regent for the young Carlos (afterward known as Karl V.) the whole of Spain. His regency lasted about two years. Then Carlos left the Netherlands for Spain. Almost his first act of sovereignty was the dismissal of the faithful regent. Ximenes was already on his deathbed, and it is doubtful if he ever knew of the act of the king. He died Nov. 8, 1517.

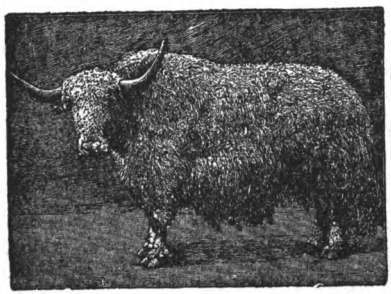
X Rays. See ROENTGEN RAYS.

X. Y. Z. Correspondence, in United States history, the name given to the dispatches of the three commissioners to France, Marshall, Pinckney, and Gerry, containing the insulting demands made by Talleyrand and the other French Directors as the price of respect and courtesy to the American republic. In the otherwise complete copies published by Congress President Adams substituted X. Y. and Z. for the names of Talleyrand's emissaries. To the demands the United States representatives returned a decided refusal. It is said that Pinckney, in response, made use of the phrase, "Millions for defense, but not one cent for tribute."

Y

Y, the 25th letter of the English alphabet, in modern English, both a consonant and a vowel. It is taken from the Latin, into which language it was adopted from the Greek (v) or upsilon.

Yacht, a decked pleasure vessel; a light and elegantly fitted-up vessel, used either for racing or for pleasure trips, or as an official or state vessel to convey royal personages or government officials from place to place. The rigs are various, and many pleasure yachts now have steam power as an accessory, or for use during calms. Racing yachts are built with very fine lines.



THE YAK.

Yak, a species of ox from the mountainous regions of Tibet. There are two races; the wild yak, generally black, which is found near the snow line, descending into the valleys in winter, and a domesticated race of various colors, black and white being most common. The yak is about the size of the common ox, to which it has a general resemblance, but it is covered with a thick coat of long, silky hair, hanging down like the fleece of a sheep, completely investing the tail, and forming a lengthy fringe along the shoulders, flanks, and thighs. This fringe, which exists in both races, was apparently developed as a protection to the animal, as the long hair forms a sort of mat which defends the body from the effects of the cold when the animal is reposing in the snow. The domesticated race is of great importance to the natives of Tibet. The yak is employed as a beast of burden, but never for tillage or draught; the milk is very rich, and yields excellent butter; the flesh is of the finest quality, and that of the calves far superior to ordinary veal. The hair is spun into ropes, and made into coverings for tents, and the soft fur of the hump and withers is woven into a fine strong cloth. The tails, often dyed red, are made into the chowries or fly-flappers, used in India. Yaks are often seen in zoölogical gardens and menageries.

Yakima, or **Yakama,** a tribe of Indians first observed on the headwaters of the Cataract and Yakima rivers, Washington, in 1805. The name has lately been used to designate members of some other tribes having little or no connection with the Yakima proper. There now remain about 900 members of this tribe, located on a reservation in Washington.

Yakoman Indians, a family of North American Indians divided into four tribes; the Yaquina (Yakwina or Yakones), Alsea, Sinslaw, and Ku-

itc (also called the Lower Umpqua tribe).

Yakoub Beg, surnamed Khushbegi ("lord of the family"), and Atalik Ghazi ("victorious guardian"); ameer of Kashgar; born near Samarcand, Russian Turkestan, early in the 19th century. He originally appeared as chamberlain to Khudayar Khan, the Mohammedan conqueror of Khokand. He became successively a commander of 500 soldiers, governor of the Ak Musjid ("White Mosque"), on the Jaxartes, where in 1853 he stubbornly resisted the advance of the Russian general, Perovsky, and governor of Kurama. At this time he had the reputation of being a brave soldier, an orthodox Mohammedan, and a stern disciplinarian. But he first rose to great eminence after the recovery of Kashgar from the Chinese in 1864. In the course of three years he had firmly established his power. For 12 years this remarkable man conferred on a large part of Central Asia the benefits of a settled though rigorous government. In his foreign policy he was strongly anti-Russian, and ultimately friendly to Great Britain. In 1874 a commercial treaty was concluded between him and Sir Douglas Forsyth to develop intercourse between India and Kashgar. But in the spring of 1877 he was assassinated, though another account attributes his death to fever, and the fabric he had so laboriously raised fell to pieces almost immediately. The Chinese armies overran the country (1878), and Kashgar again came under Chinese rule.

Yakoub Khan, Ameer of Afghanistan; born in 1849; son of Shere Ali; was nominated heir to the throne of Kabul in 1864. In 1870 he was made governor of Kandahar, and afterward was sent to Herat, where his great influence excited the fears and suspicions of Shere Ali, who now declared his youngest son, Abdullah Jan, to be his heir. In 1873 Shere Ali recalled him from Herat, but he declined to return, and for a year was practically in revolt. At length, under the most sacred pledges of safety, he proceeded to Kabul, but was treacherously imprisoned, and was only released when the flight of his father before the victorious advance of the British arms in the war of 1878 made his presence indispensable to prevent anarchy in the capital and the State. On the death of Shere 'Ali he succeeded to the throne, and on May 30, 1879, concluded a treaty of peace with the British. He was deposed in 1880.

Yale, Elihu, an Anglo-American philanthropist; born in Boston, Mass., April 5, 1648; son of an English colonist. He went to England while very young and was there educated, never returning to America. About 1678 he went to the East Indies as a trader, and acquired great wealth. From 1687 to 1692 he was governor at Fort St. George, Madras. He gave to the Saybrook Collegiate School books and money valued at $4,000 a gift which resulted in the connection of his name with the college after its removal to New Haven. His full-length portrait hangs in Alumni Hall, Yale University. He died in London, July 8, 1721, and was buried at Wrexham, a town in North Wales.

Yale, Linus, an American inventor; born in Salisbury, N. Y., April 4, 1821; applied himself for a while to portrait painting, but in 1850 began to study mechanical problems. In 1851 he patented a safety lock, and thereafter till his death was a recognized authority on all matters pertaining to locks and safes. In the course of his work he became convinced of the necessity of abandoning the use of a keyhole as affording an easy means of introduction to the lock mechanism. This led to the adoption of the permanent dial and shaft as used in the combination locks, and subsequently to the perfection of what is known as the "clock" lock. His most notable invention was the double lock, which comprised two locks within a single case, and operated by the same or different combinations. He died in New York city, Dec. 24, 1868.

Yale University, an institution of higher learning in New Haven, Conn.; founded in Saybrook in October, 1701, as the Collegiate School of the colony under the trusteeship of 10 principal ministers. The classes were taught, however, at Killingworth, now Clinton, an adjoining town, till 1707.

The institution was permanently settled in New Haven in 1716, and in 1718 its name was changed to Yale College in honor of Elihu Yale. The name Yale College applied at first only to the new building. It was given formally to the institution in its charter of 1745. The chair of Divinity was added in 1755, and another of Mathematics, Physics, and Astronomy in 1771, though this was not permamently filled till 1794. Occasional grants were made to it by the legislature before the Revolution, and $30,000 was voted by the State in 1792. Schools of Medicine (1812), Theology (1822), and Law (1824) were established; and, as reorganized in 1871, the university possesses also departments of Philosophy and Arts, the latter including besides the classical course of "Yale College" proper, the Sheffield Scientific School, post-graduate courses, and a School of Fine Arts. (1864).

In March, 1887, an act passed the General Assembly of the State authorizing the use of the title Yale University by the president and fellows of Yale College. The president is the presiding officer of the Board of Trustees and of every board of instruction. He has no required duties of teaching. There are four departments of instruction, viz.: Philosophy and the Arts, Theology, Medicine, and Law. Under the first-named department are included two separately organized sections, in which instruction for undergraduates is provided, viz.: the Academical Department and the Sheffield Scientific School; also the School of the Fine Arts, and the Department of Music, each with a special organization; and the courses for graduate instruction, under the combined faculty of the department.

The Library, the Peabody Museum of Natural History, and the Observatory are severally organized independently of the special departments, and are designed to contribute, in their appropriate spheres, to the instruction and advancement of the whole institution.

The university had in 1928 an endowment of $53,024,459. Its enrollment was 5,743 students and 563 professors and instructors.

Yalu, Battle of the, a naval combat between the fleets of Japan and China, fought Sept. 17, 1894, in which the Japanese were completely victorious. The scene of the battle was in the Yellow Sea, near the mouth of the Yalu river. The Chinese resisted stubbornly (see Philo Norton McGiffen), but were out manœuvred and thoroughly beaten by the Japanese, five of the Chinese vessels being sunk or burned.

During the Russo-Japanese War, on May 1, 1904, the passage of a Japanese army of 50,000 men under Gen. Kuroli from Korea into Manchuria, across the Yalu River, was stubbornly resisted by a Russian army of 30,000 men under Gen. Sassulitch. The Russians were routed and driven back to Potietinsky with the loss of 28 guns, of 40 officers, and 2,000 killed and wounded, the Japanese loss in killed and wounded being 700.

Yamagata, Aritomo, a Japanese marquis and field-marshal; born in 1838. The son of a Samurai chieftain; he received a military education, and in 1868 took part in the suppression of the Shogunate. He became Minister of War in 1873, created a national army out of the feudal retainers, and in 1877 defeated Saigo (q. v.) and the Satsuma Rebellion. He commanded the successful Japanese forces in the Chinese War of 1894-95, and in the Russo-Japanese War of 1904; was president of the councils of war which formulated the plan of campaign.

Yancey, William Lowndes, an American statesman; born in Ogeechee Shoals, Ga., Aug. 10, 1814; went to Alabama in his youth, and there studied law and began to practice in Montgomery. For a while he was engaged in journalism, and afterward served in both branches of the Alabama legislature. He was a member of Congress in 1844–1847, and while there exerted a strong influence as a leader of the Pro-slavery party in the South. He reported the Alabama ordinance of secession to the convention in Montgomery, which was adopted in January, 1861. He entered the Confederate Congress early in 1862, and served till his death, near Montgomery, Ala., July 28, 1863. He was an earnest supporter of slavery.

Yangtze-Kiang, the river (or Kiang) YANGTZE; popularly known as the "Girdle of China"; uniting all the central provinces of that country. It lies between Tibet and Kohonor on the W. and the Pacific Ocean on the E., and, including its many windings, has an estimated length of 3,200 miles. If its many tributaries, their fertile valleys, and the vast population they support, be considered, the Yangtze-Kiang is the greatest of the World's great waterways.

Yankee, an American-Indian corruption of the world English into Yenghees, first used in the sense of genuine American-made, by Jonathan Hastings, a farmer at Cambridge, N. Y. in 1713. The term spread as a popular name for the citizens of New England; is now applied by foreigners to all inhabitants of the United States.

Yankee Doodle, the name given to a famous tune, now regarded as a national air of the United States, or at least of the Northern portion, as "Dixie" is of the Southern. It was the martial air of the Union troops in the Civil War, and its notes are an inspiration to Americans wherever they may be.

Yankton College, a coeducational institution in Yankton, S. D.; founded in 1881 under the auspices of the Congregational Church.

Yap, one of the four main islands of the Carolines, in the Pacific Ocean, about 840 miles E. of the Philippines. It is the seat of government for the western division of the archipelago, has a high elevation and is frequently visited by heavy storms. Until modern times the natives resented the presence of the white man on their shores. In 1875 Germany and Spain asserted their rights in the archipelago and Pope Leo XIII. was chosen to arbitrate the two countries' differences. He decided in favor of Spain, and Germany purchased the island from Spain in 1899. In 1920 islands made mandate of Japan.

Yaquis, the Indians who inhabit the S. part of the State of Sonora, Mexico, in the district of Guaymas. In the time of Cortez they numbered 300,000; but are now reduced to about 15,000, of whom not more than 5,000 are able-bodied men. The Yaquis have always been at war with the Spaniards and Mexicans, and while often defeated have never been conquered. They revolted against Spain in 1735 and in 1825, and against the Mexicans in 1832, each time being overcome. In 1841 they made another attempt and for years held the government at bay. Order was restored by a compromise. War broke out again, however, and from 1848 till 1897, when a treaty was concluded at Ortiz, scarcely a year passed without a conflict between the Mexican troops and the Indians. In the summer of 1899, the Yaquis again broke out and a fierce struggle ensued. They were well armed with Winchester rifles and fought desperately; but gained no permanent success. The Yaquis, according to those who know them best, are much superior in intelligence to other Indians. They are industrious, and during the building of the Southern Pacific railroad worked faithfully. They saved the money so earned and invested it in rifles and ammunition. From June to Dec., 1906, they committed a number of atrocities, killing defenceless miners and settlers.

Yard, in ordinary language, the American and British standard of measure, being equal to 3 feet or 36 inches. As a nautical term, a spar slung from a mast and serving to extend a sail.

Yarkund, or **Yarkand,** the chief town of the province of the same name in Eastern Turkestan; 140 miles S. E. of Kashgar. It is a great emporium of trade between China and the W., but it has been repeatedly devastated by the internecine wars which are chronic in Central Asia. The bulk of the inhabitants are Mohammedans of the Turki race; and in 1866 it was captured from the Chinese by Yakoub Beg, who in 1874 entered into a commercial treaty with the British in India, and caravans of traders annually pass to and fro through the valley of Kashmir.

Yarn, any textile fiber prepared for weaving into cloth. Cotton yarn is numbered according to the number of hanks contained in a pound of 7,000

grains. Each hank, or skein, measures 840 yards. Worsted yarn has 560 yards to the skein; woolen yarn has 1,600 yards to the skein or run.

Yaroslav, a city and capital of the province of Yaroslav, Russia; at the confluence of the Kotorost and Volga rivers; 173 miles N. E. of Moscow. The city is largely engaged in manufacturing and commerce. There are numerous cotton and linen mills, silk factories, and bell foundries. The village of Velikoje Selo, included in the city, is the center of the linen manufacture of Russia. The city is the seat of Uspenskij Cathedral, begun in 1215, and has numerous other very old churches, and several monasteries. The left bank of the Volga is the suburban and residential portion of the city and contains many beautiful dwellings. (1919 Est.) 100,000.

Yates, Lorenzo Gordin, an American naturalist; born in England, Jan. 8, 1837; came to the United States in 1853; served in the geological survey of California under Prof. J. D. Whitney; had charge of the scientific department of the Frœbel Institute Los Angeles, Cal. He died in 1909.

Yates, Richard, an American lawyer; born in Warsaw, Ky., Jan. 18, 1818; was graduated at Illinois College, Jacksonville, in 1838; practised law a number of years; was elected to the legislature in 1842; and sent to Congress in 1850. In 1860 he was elected governor of Illinois. He was strongly opposed to slavery, and an ardent supporter of the government during the Civil War, taking an active part in the organization of volunteer regiments. He was United States Senator in 1865–1871, and afterward United States railroad commissioner. Died in St. Louis, Mo., Nov. 27, 1873.

Year, a unit of time, marked by the revolution of the earth in its orbit. The year is either astronomical or civil. The former is determined by astronomical observation, and is of different lengths, according to the point of the heavens to which the revolution is referred. The civil year is the year of the calendar. It contains a whole number of days, beginning always at midnight of some day. According to the present system, or according to the Gregorian calendar, every year the number of which is not divisible by 4, also every year which is divisible by 100, and not by 400, is a common year, and contains 365 days. All other years are called leap years, and contain 366. The ecclesiastical year is from Advent to Advent. A lunar year is a period consisting of 12 lunar months.

Yeast, the yellowish substance, having an acid reaction, produced during the vinous fermentation of saccharine fluids, rising to the surface, when the temperature of the fluid is high, in the form of a frothy, flocculent, viscid matter (surface yeast), and falling to the bottom (sediment yeast) when the temperature is low.

Yellow, one of the three primary colors; a bright golden color, the type of which may be found in the field buttercup, which is a pure yellow. Mixed with blue, yellow yields green, and with red it produces orange.

Yellow Bird, the American goldfinch, or thistle bird, generally distributed over North America. Also, Dendroica œstiva, common throughout the United States, and called the yellow-poll warbler and summer yellow bird.

Yellow-fever, popularly known as Yellow Jacket, a malignant febrile disease, indigenous chiefly to the West Indies, northern coasts of South America, the borders of the Gulf of Mexico, and the Southern United States. The first recorded outbreak occurred in the West Indies in 1647. It is attended with yellowness of the skin, of some shade between lemon-yellow and the deepest orange-yellow. The symptons may appear within one or two days after the poison has entered the person's body, or may not occur for six or ten. The attack is sudden, beginning with shivering, headache, pain in the back and limbs, with fever. It is most fatal from May to August; is very contagious, but a sufferer from one attack is nearly safe from a second; cold weather kills it. Until the year 1850, the Amazon River, dividing the Brazils from Guiana, limited the extension of yellow-fever S. of the line; and while the disease was raging at Rio and Bahia, at the

close of that epoch, the Montevideans flattered themselves that they were without the geographical limits of the pestilence, till it fell to their turn to sustain its visitation several years later, when the illusion was dispelled. Similar facts may be adduced regarding the extension of the disease along the shores of the Pacific; so that, however well we may be acquainted with its present range, making all due allowance for temperature, we cannot tell what the future may bring forth. In this connection it may be mentioned that a temperature of at least 72° is assumed to be essential to the development of yellow fever, though cases exceptional to this rule may now and then happen.

Yellow Hammer, or **Yellow Bunting,** a bird widely distributed over North America and Europe. It frequents hedges and low trees; it



YELLOW HAMMER.

nests on the ground, and the male assists in incubation. The song consists of few notes, but is sweet and pleasing.

Yellow Legs, a bird found in the Eastern States of North America. It has a rather long bill of greenish-black, and yellow legs. It lives among the grass and rushes on the edges of rivers or ponds, and feeds on shrimp, worms, and aquatic insects, both in salt and fresh water.

Yellow Pine, a North American tree. The wood is universally employed in the countries where it grows for domestic purposes, and is also extensively exported to Great Britain and elsewhere.

Yellows, a disease of cattle very similar to jaundice, and produced by congestion and inflammation of the liver.

Yellows, a disease to which the peach, especially in the Middle States, has long been subject. So far there has been no remedy found except that of grubbing and burning the affected trees.

Yellowstone National Park, a remarkable region in the extreme N. W. corner of Wyoming; set apart by Congress for a National reservation in 1872. Its area was originally 3,575 square miles, to which Congress in 1891 added a tract of nearly 2,000 square miles to the S. and E.— nearly all more than 6,000 feet above sea-level, and rising in the snow-covered mountains to 10,000 and 14,000 feet. Situated on the "Great Divide," its pine-clad mountains form the gathering ground for the headwaters of large rivers flowing away to the Atlantic and Pacific Oceans, and for the sake of the rainfall and the rivers its forests are carefully preserved.

The region is remarkable as well for its scenery as for its famous hot springs and geysers. There are three geyser basins located in the valley of the Fire Hole river, at an average altitude of 7,000 feet above the sea-level. They are the Upper, Middle, and Lower, and are from 10 to 15 miles apart, in their order. The Upper, or Great Geyser basin, is the most active. Here are located the great spouters, conspicuous among which are the Giant, Giantess, Bee Hive, Castle, Grand Cornet, Saw Mill, Lion and Cub, and last, but by no means least, Old Faithful. The tourist can rely as absolutely on Old Faithful giving an exhibition every hour and four minutes as he can on the rise of the sun at the time specified in the almanac. The stated intervals of her activity have not varied in the memory of the oldest habitue of the park. Other geysers are variable in the time of their action. In fact all of the others seem to be subject to changes. The Bee Hive is becoming more active every season. She gives an exhibition from two to three times every 24 hours. The Giant and Giantess and Castle can not always be counted on, but

they are all worth watching, for they make a magnificent display when in action. The Giant averages an exhibition about every six days and the Giantess about every 11 days.

In the Middle Geyser basin there are no cone geysers, such as abound in the Upper basin. The great marvel of the Middle basin is called "Hell's Half-Acre." This is a steaming abyss on the bank of the Fire Hole, 25 or 30 feet in depth, in a limestone formation, which at irregular intervals of from four to five times per day, is distinguished by the intensity of its activity. Above the half acre is a boiling lake of cerulean-hued water, the overflow from which winds its way in wavelets over beautiful formations tinted in blue and gold and purple and other delicate dyes. On this ever-changing surface the pine-clad sides and snow-crowned mountains are mirrored in spectacular splendor. Across the river, and far up on the slope beyond, in a group of blasted cedars, is the "Devil's Paint Pot," a boiling caldron of many-colored clays, bubbling and steaming like a soap vat. These colors combine, by chemical action, with each other, presenting an ever-changing tint.

The mammoth hot springs are of a class with those in the geyser basin. The element of beauty enters into the formations from the deposits left by the water. These have been built up by ages of activity, and are in scalloped terraces. Their greatest activity is manifested at the base of Capitol Hill, on the picturesque bank of the Gardiner river. But there are unmistakable evidences of their activity for miles back. In walking over some of the terraces where the water has ceased to run, the formation sounds hollow underneath, the action of the elements having built the terraces at the expense of the limestone beds below the surface. Caverns have been found underneath the now inactive basins, which are resplendent with stalactite and stalagmite formations that glisten under the blaze of a torch with singular brilliancy. Ascending the terraces to their apex, one may look down into pools of water welling up from unknown depths, heated by mysterious agency, and flowing in wavelets over fantastic ledges of limestone formations from terrace to terrace, and finally sinking into an invisible channel, whence it finds its way into the Gardiner. Wire baskets, horseshoes and other metallic articles of ornamentation are most exquisitely enameled after hanging 20 or 30 hours exposed to the drippings of these springs. In the foreground of the formation resulting from the deposits left by the water is a mass of limestone towering 40 or 50 feet in the air, shaped like the cap of the Goddess of Liberty and bearing that title.

In going from the Mammoth Hot Springs to the Falls of the Yellowstone the tourist must abandon his wagon at Tower Falls, if he is so equipped, and pack his outfit for the trail. The distance for packing, however, is but 18 miles, if he only desires to go to the falls, but if the lake be one of his objective points he must prepare for 40 miles or more of packing trip by stocking up his larder and rolling in all of his robes, for these are the coldest points in the park, the altitude being 8,000 feet, with the exception of Mount Washburne. On this road to the Great Falls of the Yellowstone the principal point of interest is the Tower Falls, though the whole route is wild and picturesque. Tower Falls are so called because of a towering mass of stone which rises up from the verge of the precipice to a height of about 100 feet from the water, where it breaks over the ledge. These falls are noted for their simple beauty, falling in solid sheets for 150 feet, and sending showers of spray curling up from the foaming pool below.

The trail from Tower Falls brings the tourist to a standstill and abruptly on the brink of an awful abyss, as it leads directly to the Grand Canyon, into the dizzy depths of which one gazes for the first time with mingled emotions of awe and admiration. On the opposite side of the stream the walls of the canyon rise abruptly for more than 2,000 feet, while on this there is a gradual descent half way down of sliding cinnabar and other delicately tinted chalky formations, broken at intervals by tower-

ing pinnacles of mineral rock, which stand out in bold relief against the brilliant background. These pinnacles take on many fantastic forms. From the base of these solemn sentinels, the descent to the water line is as abrupt as from surface to torrent on the opposite side. Far below winds the foaming current of white-crested wavelets spread out like a silvery band. Though the channel is 160 feet wide, it appears no larger than a trout stream. Rounding Point Lookout the tourist is confronted with a full view of the falls, where the whole volume of water breaks over a rock-ribbed ledge and is riven by a big black boulder in the center, and again united rolls down to a depth of 370 feet, sending up showers of spray which glisten in the sunlight. The spectacular splendors of the scene in the canyon below the falls is brightened by the effect of the roaring cataract on the senses. It is the most magnificent scenery of its class on the Continent, with the one exception of the Yosemite. Above the main falls is another, which alone would be a great attraction, but is dwarfed into insignificance by the lower and larger one below. Above this, still, is a series of cascades, over which the vast volume of water from the lakes above rushes and breaks into foam everlastingly. These rapids can be heard for miles of a still night, making much more noise than the roaring cataract at the falls. Here is the upper mouth of the canyon and the beginning of 10 miles of canyon scenery.

Six miles from the falls, on the road to the lake, is the Sulphur Mountain, an immense mound of pure sulphur crystal with a number of steaming springs at its base. The mountain seems to have been built up by deposits from these springs, and the formative processes are still at work on the adjacent plain. The overflow from the springs winds down the declivity toward the Yellowstone, leaving sulphuric deposits in its course. From Sulphur Mountain to the great lake the distance is 15 miles, and the trail winds along the picturesque bank of the Yellowstone. The river's source is not the lake, as many suppose; the lake might rather be called an expansion of the river, which is never narrower than about 120 feet, from the lake to the Missouri, some 600 miles distant. The lake is said to have 300 miles of shore line, but it never has been fully explored. It certainly is the gem of the lakes, set as it is in a series of mountain peaks, pine-clad and snow-crowned. The monotony of its crested waves is broken by a verdure-clad island, giving it the appearance in summer of an emerald in a setting of brilliants. On the return trip from the lake the tourist will be repaid by short divergence from the trail for a glimpse of the Mud Volcano, which, while it was shorn of its symmetrical crater by a convulsion several years ago, is still a singular spectacle. Looking down into its deep and slimy crater one may see a mass of mud and water rushing athwart the aperture, ever and anon spurting toward the surface. At irregular intervals this slimy substance is shot high into the air, plastering the adjacent cedars now sapless and shorn of their green vestments by the hot blasts from below. These are the principal objective points of a tour in the park. There are many other interesting places, such as Gibbon Falls and canyon; Petrified Forests; Hoodoo, or Gaflin, Mountains; Mount Washburne, from whose summit may be seen the steaming geysers in the distance, and a general bird's-eye view gained of the whole picturesque plateau.

Yeoman, a term which seems, in early English history, to have been applied to a common attendant menial servant, but after the 15th century came to denote a class of small freeholders, forming the next grade below gentlemen. The term yeoman was also given to the 40-shillings freeholder, or, more loosely, to any small farmer or countryman above the grade of laborer. The term is also familiar in the titles of functionaries in royal households, such as yeoman usher of the black rod, yeoman of the robes, etc.

Yeomanry, specifically, a force of volunteer cavalry first embodied in Great Britain during the wars of the French Revolution, and consisting to a great extent of country gentlemen and farmers. They are liable to be

called out in aid of the civil power in case of riot at any time; in case of actual invasion, or the appearance of an enemy on the coast or during a rebellion, they may be assembled for actual service; they are then subject to the Mutiny act and Articles of War, The yeomanry volunteered for service in the late South African war.

Yerkes Observatory, the observatory of Chicago University, at William's Bay, Wis., near the shore of Lake Geneva, 75 miles N. of Chicago, founded in 1892 by Charles T. Yerkes, of Chicago, and completed in 1895. The site, chosen with a view to escaping the smoke, dust, electric lights, and noise of a city, consists of fifty acres of wooded land. The observatory, in the form of a Roman cross, with three domes and a meridian room at the end of each, is 330 feet long from E. to W., and is the largest and most complete building for the purpose in the world. It has a hall through the center, and on either side of this, library, computing room, lecture room, museum, two spectroscopic laboratories, galvanometer room, chemical laboratory, photographing rooms, physical laboratory, optician's room, and a workshop. The great dome, the largest in the world, 90 feet in diameter and weighing 70 tons, is at the W. end. It is revolved, and the shutter opened and closed, by an electric motor, which also raises and lowers the floors. Under this dome is the immense Yerkes telescope. Two lesser domes house two other telescopes, besides which the observatory has sidereal and meantime clocks, a solar spectograph, a stellar spectograph, a position micrometer, a photoheliograph, a meridian circle, and a transit instrument. The heliostat room is 100 feet long by 12 feet wide, and has an iron roof which rolls off to the S. The heliostat, with plain mirror 12 inches in diameter, is on a pier at the N. end of the room. The building containing the engines, dynamos, and boilers for generating power and heat, is for safety, several hundred feet distant from the observatory. In the instrument shop it is hoped it will be possible to construct instruments and laboratory apparatus for advanced investigation, under the immediate supervision of those who are to use them. The observatory issues several publications, including irregularly issued bulletins containing announcements of discoveries and results, and the "Astrophysical Journal." The refractory telescope with an aperture of 40 inches is one of the largest in the world.

Yerkes, Charles Tyson, an American capitalist; born in Philadelphia, Pa., June 25, 1837; was engaged as exchange broker in 1858–1861, and as banker in 1861–1886. He failed in 1871, being at the time in debt to the city of Philadelphia for bonds sold on its account, and as he refused to give the city preference over other creditors he was prosecuted and imprisoned, but afterward pardoned, and his conviction was subsequently pronounced illegal. He has since become very wealthy, and prominent in great enterprises in Europe and America. In 1892 he gave the University of Chicago the great telescope. He died Dec. 29, 1905.

Yew, an evergreen tree with spreading branches, linear acute leaves more or less falcate, coriaceous, shining above, paler below, arranged in two ranks. It is indigenous in most parts of Continental Europe and in the Himalayas 6,000 to 10,000 feet above the sea-level. The sap wood of the yew is white, the heart wood red, hard, close-grained, and susceptible of a fine polish. It weighs 59 pounds to the cubic foot. It is prized in Europe by cabinet makers, and was formerly much used in England for bow making. See also TAXUS.

Yezidi, or **Yezidee,** a sect of religionists who, while admitting that God is supreme, yet believe the devil to be a mighty angel deserving of worship. They live near the Euphrates.

Yezo, or **Ezo,** less correctly Yesso, native Hokkaido, the most N. of the four great islands of Japan; still only partially settled; area, 36,299 square miles; pop. 843,717. Its official name is Hokkaido, or "Circuit of the Northern Sea," received in 1870, when it was brought under a special colonization department. An agricultural mission from the United States assisted in founding model farms, laying out roads, and building bridges.

The capital was changed from Matsumae to Sapporo, which was provided with a railroad to Otam, its port, and to Poronai, the great coal district inland. An agricultural college, breweries, canning factories, beetroot sugar factories, etc., were established, but with inconsiderable results. The coal mines are worked by convict labor. A system of military settlements has of late years been put into force, partly with the view of furnishing a militia against possible invasion from Russia, which is supposed to covet the fine harbors of Yezo. The principal products of Yezo are coal, seaweed, sulphur, fish, the catches of salmon on the river Ishikari being sometimes enormous. The fauna and flora of Yezo differ materially from those of the main island. The Yezo pony, originally from Nambu on the main island, is hardy, and foreign blood has been introduced, promising good results. The original inhabitants of Yezo were probably pit dwellers, of whom distinct traces have been found. After these came Ainos or Ainus, whose principal settlement is at Piratori, 50 miles E. of Mororan. The bear festival in September, is the great event of their year. The Ainos number 15,000, and are a harmless and remarkable race. The S. corner of the island was wrested from them in the 16th century, and the castle of Matsumae, in the extreme S. W., became in the next century the headquarters of Japanese rule. Yezo has a rigorous climate, being for six months of the year under snow and ice (two feet in the S. to eight feet in the N.). The center of the island is but little known, though it has been crossed twice or thrice by explorers. Pop. of chief seaport, Hakodate (1922), 144,749.

Yoder, Robert Anderson, an American educator; born in Lincoln co., N. C., Aug. 16, 1853; was graduated at North Carolina College in 1877; had charge of the Concordia High School, North Carolina; ordained in 1879; held pastorates in North Carolina; president of the Concordia College in 1888–1891; then became president of Lenoir College, North Carolina. He died in 1911.

Yokohama, the chief port of entry in Japan, and the headquarters of foreign shipping companies, banks, consulates, and commerce generally. Yokohama is a poorly laid-out town with narrow winding streets. The Bluff, however, conceded for residence in 1867, is a beautiful spot, commanding fine views of Fuji-san and of Yokohama bay. The bay is beautiful. Work on a large harbor was carried out in 1889–1896; it is enclosed by two breakwaters 1¼ miles long, and an iron pier, 1,900 feet long. Pop. (1922) 422,938.

Yonkers, a city in Westchester county, N. Y.; on the Hudson river and the New York Central & Hudson River railroad; 15 miles N. by E. of the Grand Central depot, New York city; has a beautiful location, with fine views of the river and Palisades; contains the old Phillipse Manor House (now the City Hall), Hebrew Home for the Aged and Infirm, Leake and Watts Orphanage, Homœopathic Home, St. Joseph's and St. John's hospitals, Mount St. Vincent Convent, and the former residence of S. J. Tilden. Pop. (1920) 100,176 (1930) 134,646.

York, city and capital of York county, Pa.; on Codorus creek and the Pennsylvania and other railroads; 94 miles W. of Philadelphia; historically noted as the meeting-place of the Continental Congress while the British held Philadelphia (1777); is in a rich farming section; and manufactures farm implements, wire-cloth, wall-paper, brick, soap, organs, pianos, hosiery, condensed milk, and carriages and wagons. Pop. (1930) 55,254.

York, a city in Yorkshire, England, 188 miles N. of London. The great object of attraction is the minster or cathedral the finest in England, which dates from the 7th century, but did not begin to assume its present form till the 12th century, and was not complete till 1472. It is built in the form of a Latin cross with choir, aisles, transepts, and three towers. York was the capital of Roman Britain. Pop (1921) 84,600.

Yorktown, a town and county-seat of York co., Va.; on the York river; 7 miles W. of Chesapeake bay. Here is the oldest custom house in the United States. The city has a monument

commemorating the surrender of the British army under Lord Cornwallis. It is historically famous for its two sieges. In the first the British, numbering 8,000, made a stand and threw up earth works, in August, 1781, and were supported by several vessels in York river. Washington with an army of 16,000, including 7,000 Frenchmen, and aided by a French fleet under Count de Grasse, forced the surrender of the place, Oct. 16, 1781. The total loss of the allied troops was about 300 and that of the British about 550. This was the last important action in the Revolutionary War. In the spring of 1862 the city was occupied by 50,000 Confederates under Generals Johnson and Magruder. On April 5, General McClellan laid siege to it with 90,000 men. The Confederates withdrew secretly from the city on the night of May 3-4, towards Richmond; they were pursued till the 5th, when the battle of Williamsburg was fought, resulting in a victory for the Union army.

Yosemite Valley, a cleft in the W. slope of the Sierra Nevada, about the center of California, and 140 miles E. of San Francisco. The name Yosemite is an Indian word which signifies "large grizzly bear." This celebrated valley, noted for the sublimity and beauty of its scenery, is about 7 miles long and ½ to nearly 2 miles in breadth, and is traversed by the Merced River. When one arrives in the valley, at the bottom of the canyon, he finds himself as it were in a room. The floor of the room is a mixture of meadow and woodland, and a river runs across it, entering by a door at one end and going out by a door at the other end. The river averages about 50 yards in width. Through a second door in the upper end another stream (Jenayale creek) comes into the room, but joins the Merced soon after entering. The walls of the room are of granite, and are in places quite plumb, in others nearly plumb, and elsewhere they have a tendency to tilt back a little. At the upper edges they are hacked and gouged out of all semblance of regularity or neatness. It would be next to impossible to put a roof on the room without leaving large gaps underneath. The chips and splinters made by the hacking and gouging lie in vast heaps piled up against the lower part of the walls, and are generally overgrown with forest vegetation.

If the Eiffel Tower were standing on the floor of the Yosemite room and you were looking down at it you might easily take the tower to be a queer bit of bric-a-brac, resembling possibly the burned stump of a California big tree.

Next consider the great torrents of water pouring over the top of the walls here and there along each side, through gaps made by the hacking and gouging. The streams are not broad like Niagara, nor even as wide as the Rhine Falls at Schaffhausen, but what they lack in width is more than made up by length. The Bridal Veil Fall, which drops from a low part of the wall, measures 900 feet from top to bottom. It makes one clear drop of 600 feet, and comes down the other 300 by a series of jumps. The Ribbon, the Sentinel, and the Royal Arch are falls that, after rolling over the edge, must get through space of from 2,000 to 2,500 feet before arriving at the floor. There are others; but the most notable of all, as far as figures go, is the Yosemite Fall. This one makes a clean skip of about 1,450 feet from the first jumping-off place; then in a succession of hops it comes down 626 feet lower, and then it drops 400 feet, straight down. After that it goes downward in a series of cascades a further matter of 80 or 100 feet. Altogether the height of the fall is reckoned at 2,550 feet. Other notable features are Mirror Lake, Cathedral Rock, Half Dome, 4,700 feet high; Three Brother, 4,000 feet, and El Capitan, 3,400 feet.

Youmans, Edward Livingston, an American scientist, long the editor of the "Popular Science Monthly"; born in Coeymans, N. Y., June 3, 1821. He died in New York city, Jan. 18, 1887.

Youmans, William Jay, an American chemist; born in Milton, Saratoga co., N. Y., Oct. 14, 1838; was for a number of years editor of the "Popular Science Monthly," succeeding his brother Edward. He died in Mount Vernon, N. Y., April 10, 1901

Young, Andrew White, an American political economist; born in Carlisle, N. Y., March 2, 1802. He died in Warsaw, N. Y., Feb. 17, 1877.

Young, Bennett Henderson, an American lawyer; born in Nicholasville, Ky., May 25, 1843; served in the Confederate army under Gen. John H. Morgan in the Civil War; commander-in-Chief, United Confederate Veterans, 1912-13.

Young, Brigham, an American Mormon; born in Whitingham, Vt., June 1, 1801. He learned the trade of a painter and glazier. Early in life he joined the Baptists, but when about the age of 30 was converted to Mormonism, and openly joined the sect at Kirtland, O., in 1832. In 1835 he was ordained an elder and sent forth among the 12 apostles, the New England States being the district assigned to him. On the death of Joseph Smith, in 1844, he was unanimously chosen president and prophet, though he had three competitors for the office, one of whom, Sidney Rigdon, he soon afterward excommunicated. On the forcible expulsion of the sect from Nauvoo, Ill., President Young led them to the valley in the heart of the Rocky Mountains, where he founded the present Salt Lake City. His followers forming a nucleus, others poured into "the Promised Land," and in 1849 an attempt was made to organize a State, to be called the State of Deseret. The United States government refused to sanction the new State, but Utah was organized as a territory, and Young appointed governor.

Young was the founder of polygamy as an institution, and was among the first to practise it. In 1852 he promulgated the "celestial law of marriage," which he declared to have been revealed to Joseph Smith nine years before. A large party, among whom were Smith's wife and sons, in the Church opposed the innovation, and declared the revelation to be a forgery, but Young's influence carried the day. He himself had from 15 to 18 actual wives, besides numerous spiritual wives who were formally "sealed" to him. He was twice indicted for polygamy, but each time the case fell through. His 15th wife sued for a divorce in 1875. He died in Salt Lake City, Aug. 29, 1877.

Young, Charles Augustus, an American astronomer; born in Hanover, N. H., Dec. 15, 1834; was graduated at Dartmouth College (1853), Professor of Mathematics, Physics, and Astronomy in Western Reserve College; captain of a company of the 85th Ohio Volunteers (1862); Professor of Astronomy and Physics in Dartmouth College; Professor of Astronomy in the College of New Jersey, at Princeton (1877). He was a member of the eclipse parties to Iowa in 1869, and to Spain in 1870; of the transit of Venus party to Peking, China, 1874, and organized the Princeton eclipse expedition to Denver in 1878. He discovered the green line of the solar corona in 1869. At the 1870 eclipse he discovered the so-called "reversing layer" surrounding the solar photosphere, and in 1872 detected the bright reversal of many lines of the solar spectrum in ordinary sunlight. He died in 1908.

Young, Clark Montgomery, an American educator; born in Hiram, O.; was graduated at Hiram College; and after 1883 engaged in educational work in South Dakota. He was secretary of the Territorial Board of Education of Dakota, and of the State Board of Education of South Dakota; and Professor of History and Sociology in the University of South Dakota. He died in 1908.

Young, Frederick George, an American educator; born in Burnett, Wis., June 3, 1858; was graduated at Johns Hopkins University in 1886; was vice-principal of the State Normal School, in Madison, S. D., in 1887–90; principal of the Portland High School, Oregon, in 1890–94; president of Albany College, Oregon, in 1894–95; became Professor of Economics and History in the University of Oregon in 1895.

Young, James Thomas, an American author; born in Philadelphia, Pa., Sept. 23, 1873; graduated at the University of Pennsylvania in 1893; Director of Wharton School of Finance and Commerce, 1904–12; then Professor of Public Administration, University of Pennsylvania.

Young, Jesse Bowman, an American clergyman, author, and editor; born in Berwick, Pa., July 5, 1844; was graduated at Dickinson College in 1868; served three years in the Union army in the Civil War, ending as captain; entered the ministry of the Meth-

odist Episcopal Church, and was pastor in Pennsylvania and Kansas City, Mo.; editor of the "Central Christian Advocate." He died July 30, 1914.

Young, John Russell, an American journalist; born in Dowington, Pa., Nov. 20, 1841. At the outbreak of the Civil War, war correspondent; joined the editorial staff of the New York "Tribune"; established the "Morning Post" in Philadelphia; the "Standard" in New York; was European correspondent of the New York "Herald," as correspondent of the same paper he accompanied General Grant in his journey round the world; was appointed minister to China; was appointed Librarian of Congress, June 30, 1897. He died in Washington, D. C., Jan. 17, 1899.

Young, Mrs. Julia Evelyn, an American verse writer and novelist; born in Buffalo, N. Y., Dec. 4, 1857.

Young, Owen D., an American lawyer and executive. Born 1874. Began practice of law in Boston 1896. In 1913 he became vice-president of General Electric Company. At Paris in 1924 he materially aided in forming and finally bringing to acceptance the Dawes Reparation Plan to re-establish the economic unity of Germany. Acted for some months as Agent General under this agreement. Later resumed direction of the General Electric Co. as vice president.

Young, Samuel Baldwin Marks, an American military officer; born in Pittsburg, Pa., Jan. 9, 1840; entered the Union army in 1861; served with distinction through the Civil War; and was brevetted Brigadier-General; joined the regular army; was commissioned a Brigadier-General of volunteers, May 4, 1898; and participated in the Cuban campaign; was promoted Major-General of Volunteers, and honorably discharged after the surrender of Santiago; served in the Philippines in 1899–1901; promoted Brigadier-General, U. S. A., Jan. 2, 1900; Major-General, Feb. 2, 1901; served as military governor of Northern Luzon; commanded the Department of California; was the first president of the newly-established Army War College, in Washington, D. C., 1902–03; Lieutenant-General in command of the Army, and Chief of Staff to the President, 1903; retired, Jan. 9, 1904; and was governor of the U. S. Soldiers' Home, Washington, D. C., 1909–16.

Young, Samuel Hall, an American clergyman; born in Butler, Pa., Sept. 12, 1847; was graduated at the University of Wooster and at the Western Theological Seminary, Allegheny, Pa.; and ordained in the Presbyterian Church. He went to Fort Wrangel, Alaska, as a missionary and explorer; organized the first Protestant Church in Alaska; held pastorates in California, Illinois, Iowa, and Ohio; later sent to the Klondike; appointed superintendent of Presbyterian missions in Alaska.

Young Men's Christian Associations, organizations of young men in the different cities, demanding a profession of Christianity in their active, and good moral character in their associate members, and working by methods in harmony with Christianity for the physical, social, mental, and spiritual improvement of their members, and of young men in general. They originated in an invitation from Mr. George Williams, a London dry-goods merchant, to a number of his clerks to meet in an upper room of his warehouse for the study of the Bible and prayer. This was in 1844. The meetings proved so beneficial, that rooms were hired in a central locality and other young men were invited to attend. Similar associations were organized in other cities and gradually over the whole country. In 1851 the movement reached the United States, where it has since had a rapid development in numbers and effectiveness. At the outbreak of the World War the American associations took an energetic grasp on needful relief measures, and when the United States was forced into the war the efforts of the associations to stabilize the health and morals of the young men called into the military service were carried out with intensive vigor. On the landing of the first contingent of American troops in France, they found that the Y. M. C. A. had preceded them and established centers for their comfort and care.

Youngstown, city and capital of Mahoning county, O.; on the Mahoning river and the Baltimore & Ohio

and other railroads; 66 miles S. E. of Cleveland; is in the richest bituminous coal section of the State; is engaged in mining coal and manufacturing farm implements, iron, steel, leather and belting, oil cloth, iron pipe, rubber goods, flour, and boilers; and contains a Federal Building, McMillan Library, Baldwin Memorial Kindergarten, Rayen School, City and hospitals. Pop. (1920) 132,358; (1930) 170,002.

Young Women's Christian Associations, societies devoted to the spiritual, mental, social and physical development of young women. In the United States, these associations grew out of the Ladies' Christian Union of New York, established in 1858, the first Young Women's Christian Association in this country being formed in Boston, Mass., in 1866. These associations rendered effective service in the World War both at home and abroad on the lines of their varied objects.

Ypres, a town of Belgium, in W. Flanders; 8 miles from the French frontier, 30 miles S. S. W. of Bruges. It was at one time one of the most important manufacturing towns in Flanders, being especially noted for its diaper fabrics; but now its chief products are thread and lace. The town dates from the 9th century; was strongly fortified by Louis XIV. in 1688; and in the great European wars has frequently been besieged. Its Cathedral of St. Martin (1221–1350) is a fine Gothic edifice, with an altar of Carrara marble. The town was one of the most severely contested objectives in the World War. The British and French occupied it, Oct. 14, 1914; the first battle in the great German campaign against it was fought, Oct. 21–31 following; the second, Nov. 10–12; and it was a center of the most determined operations in 1917.

Yucatan, a peninsula forming the southeastern extremity of Mexico. Before its conquest by the Spaniards it was the seat of a flourishing civilization. It is not for the most part a sparsely cultivated region, whose forests yield excellent timber, cabinet-woods, and dye-woods, and which has recently been productive of great quantities of sisal or so-called Yucatan hemp. Five-sixths of the inhabitants are Indians, preserving the speech of their ancestors, whom the Spaniards dispossessed. In 1861 the peninsula, which since 1824 had formed one state in the Mexican Confederation, was divided into two: Yucatan, area, 35,203 square miles, pop. (Est.) 400,000; capital, Merida; and Campeachy, area, 18,087 square miles, pop. 90,000.

Yucca, a genus of American plants, natural order Liliaceæ popularly known as Adam's needle. They are evergreen shrubs, their stem tending to aborescence, crowned by a circle of linear, lanceolate, rigid leaves, from the center of which rises a large panicle of snow-white, whitish-green or cream-colored flowers.

Yukon, the largest stream in the extreme N. W. portion of the North American continent, rising in Canada about latitude 57° 45′ N., longitude 130° 45′ W. It pursues a generally westward course, of which the length is estimated at 2,044 miles, the greater portion in Alaska, and enters the Pacific Ocean. It gives its name to a N. W. territory of Canada, with an area of 207,076 square miles, and a population (1921) 4,700.

Yule, the old English name for Christmas, still used provincially, as well as in Yule log, Yule cake, Yule tide. The word is not connected with Ice. *hjol,* "wheel," nor yet with *jawl* or *jowl,* "to howl" or "cry." The Anglo-Saxon form is *geol,* cognate with the Ice. *iol.*

Yung Wing, a Chinese diplomatist; born in Nau Ping, China, Nov. 17, 1828; came to the United States in 1847; was graduated at Yale College in 1854; and in 1864 was commissioned by the Chinese government to buy machinery in the United States for the arsenal of Kiang-Nau. In 1875 he married Miss Mary Kellog of Hartford, Conn., an act which led to his recall. In 1878 was appointed assistant minister of China to the United States, where he remained till the outbreak of the Chino-Japanese War. At the close of the war he was appointed one of the peace commissioners. In 1902 he returned to the United States, and took up his residence in Hartford. He died April 21, 1912.

Z

Z, the last letter of the English alphabet, a sibilant consonant. The words in modern English which begin with z are all derived from other languages, chiefly Greek. It was not known in the oldest English.

Zabern, a town of Alsace, on the Zorn river and the Rhine-Marne canal; 27 miles N. W. of Strassburg. It is at the foot of a pass through the Vosges Mountains, commanding the road which leads almost direct to Strassburg. On the western side of the Vosges is Pfalzburg. Goethe immortalized the beauty of this road in his "Dichtung und Wahrheit."

Zahm, John Augustine, an American educator; born in New Lexington, Perry co., O., June 14, 1851; was graduated at Notre Dame University in 1871; entered the Order of the Holy Cross in the same year; had charge of the scientific department of Notre Dame University in 1874; was curator of the University Museum for many years; and became provincial of the Order of the Holy Cross in 1897.

Zalinski, Edmund Louis Gray, an American military officer; born in Kurnick, Prussian Poland, Dec. 13, 1849; came to the United States in 1853 and entered the army at the age of 15; received a commission in 1866. From 1872 to 1876 he was Professor of Military Science at the Massachusetts Institute of Technology; was graduated at the Artillery School, Fort Monroe, in 1880, and at the School of Submarine Mining, Willetts Point, several months later. In 1889 he was sent to St. Petersburg as military attache to the American Legation. He retired in 1894; died in 1909.

Zambesi, the most important river in Southeastern Africa, and the largest flowing into the Indian Ocean. The course of the whole river is about 1,400 miles, and it drains an area of 600,000 square miles.

Zane, Ebenezer, an American pioneer; born in Berkeley co., Va., Oct. 7, 1747; made the first permanent settlement on the Ohio river in 1770, on the site of the city of Wheeling, and built there a block house called Fort Henry; held several military and civil offices, and attained the rank of colonel. The land where the city of Zanesville, Ohio, now stands formed a portion of his property. He died in 1811.

Zanesville, city and capital of Muskingum county, O.; on the Muskingum river and the Baltimore & Ohio and other railroads; 59 miles E. of Columbus; has large river traffic on the Ohio and Mississippi; manufactures soap, iron, glass, machinery, tubes, woolen and bent-wood goods, coffins, stoneware, brick, and tile; and contains a Soldiers' and Sailors' Memorial Hall, McIntue Children's Home, Zanesville Athenæum, and Public Library. Pop. (1930) 36,440.

Zangwill, Israel, an English-Jewish novelist; born in London, in 1864. He began life as a London teacher, and while teaching, graduated at the London University. He wrote "Children of the Ghetto," etc.

Zanzibar, a British protectorate in East Africa. The continental part became wholly a part of British East Africa by the conquest of German East Africa in 1916; while the island and town of Zanzibar, and the island of Pemba are entirely under British protection. The island (area

640 square miles) is very fertile and well cultivated, being especially suited for the cultivation of cloves, sugar, coffee, cocoa, and various spices, of which there is a considerable export. The population (216,790) is extremely heterogeneous, including Europeans, Arabs, half-caste Portuguese from the Malabar coast of India, and the Suahilis from the mainland. In 1899 Germany removed her rights of extraterritoriality in Zanzibar from such time as the similar rights possessed there by Great Britain should be abolished. The imports in 1926 had a value of $8,855,620, and the exports $9,141,290. Zanzibar, the chief town (128,099 inhabitants), on the W. side of the island, is the center of trade for the E. seaboard of Africa and of missionary and exploring work for the interior. At the instance of the British government the slave trade has been abolished and slavery was nominally abolished in 1897.

Zealand (Danish, Själland), the largest and most important island of Denmark; lies between the Cattegat and the Baltic, and is separated by the Sound from Sweden and by the Great Belt from Fünen; length, 80 miles; extreme breadth, 65 miles; area, 2,680 square miles. The island contains several beech forests, is exceedingly fruitful in corn (particularly barley and rye), and breeds excellent horses and cattle. Agriculture and cattle-breeding are the principal employments of the inhabitants. The chief place is Copenhagen on the E. coast; the next in rank and size are Elsinore in the N. and Korsör in the S. W.

Zealand (Dutch, Zeeland), a province of the Netherlands, consists of portions of Flanders (East and West) and of the islands Walcheren, North Beveland, South Beveland, Schouwen, Duiveland, and Tholen, which lie between the mouths of the Scheldt and the Mass (Meuse); area 707 square miles, and a pop. (1920) of 238,500, about three-fourths Protestants. The provincial capital is Middelburg; Flushing is also in Walcheren. The greatest part of the soil, which is a rich clay, has been redeemed from the sea; and the number of polders or drained districts is about 400. The neighboring seas abound with fish, and in Schouwen many eggs are collected, myriads of waterfowl resorting thither to form their nests. In 1866 a ship canal through the island of South Beveland was made to take the place of the Eastern Scheldt. Hence came the name of New Zealand.

Zebra, a popular name for any of the striped forms of the genus Equus; thus embracing the quagga, the true zebra, and Burchell's zebra. In all three the external characters are those of the ass rather than of the horse; the legs are without warts, the tail is furnished with long hairs only toward the extremity, the neck is full and arched, and the mane stiff and erect. All the species of this division are rapidly vanishing before advancing civilization, and in all probability will become extinct before very many years.

Zebu, the native name for any breed or individual of Bos Indicus. The zebus attain their greatest development in India, but range E. to Japan and W. to the Niger river. They vary greatly in size, some being larger than European cattle, while others are no bigger than a month-old calf.

Zebulun, the 10th son of Jacob; he gave his name to one of the 12 tribes of Israel, and to a region of Palestine.

Zechariah, or **Zacharias,** the name of many ancient Hebrews, including two prophets, various priests, and Levites, and other prominent men.

In the Old Testament canon, the 11th in order of the 12 minor prophetic books. The name prefixed to it is that of "Zechariah, the son of Berechiah, the son of Iddo the prophet." In Ezra he is called the son of Iddo, but son is sometimes used vaguely for lineal male descendant, and may easily signify grandson. When Cyrus permitted the Jews to return from Babylon he also accorded them permission to rebuild the temple and the foundations of the edifice were at once laid. The jealousy of the neighboring tribes led to the stoppage of the work. In the second year of Darius Hystaspes, permission was obtained to resume it and building was recommenced with the patronage and active aid of Zerubbabel the civil governor of Judæa, Joshua the High Priest, etc. Enthusiasm for the work was excited among the previously apathetic people by the proph-

ets Haggai and Zechariah. The former seems to have been the senior in point of years, and commenced his addresses and predictions in the sixth month of the second year of Darius, while Zechariah did so in the eighth month. In the first part of the book the prophet counsels a return to Jehovah; in the second, which has in it various symbolic visions, he encourages the building of the temple. The style of chapters ix.–xi. differs from that of the first eight; and that of xii.–xiv. to a certain extent from both. In x: 6, the house of Judah requires to be strengthened, that of Joseph to be saved, and in verse 11 is the prediction "the pride of Assyria shall be brought down," as if it stood when the words were penned; whereas by the time of Darius Hystaspes it had forever passed away. Some assign these chapters to an earlier Zechariah, a contemporary of Isaiah (about 736 B. C.).

Zedekiah, the son of Josiah, King of Judah, placed on the throne after Jehoiakin had been removed by Nebuchadnezzar, on his second taking of Jerusalem, 599 B. C. He reigned during 11 years. He entered into an alliance with Pharaoh-Hophra, King of Egypt, and revolted against Nebuchadnezzar, who laid siege to Jerusalem. The prophet Jeremiah counselled Zedekiah to save his city and throne by submission to the Chaldeans; but the king maintained his defense of the city. The Egyptians came to his relief; but, on Nebuchadnezzar offering them battle, they retreated to their own country, and Jerusalem, after undergoing a siege of 19 months, was taken 586 B. C.

Zeebrugge, a seaport of Belgium, in West Flanders, on the North Sea, about 16 miles N. E. of Ostend, 12 miles N. W. of Bruges, 35 miles N. E. of Ypres; was occupied by the Germans on their invasion of Belgium; and was subsequently made by them one of their principal U-boat bases for operations against British and French coast towns. The town was bombarded by British Warships, Nov. 23, 1914, and for more than three years was in the zone of a terrific struggle between the Entente Allies and the Central Powers. After the German occupation of Belgium, the seaport was made one of the principal submarine bases, and during the progress of the war it was subjected to frequent bombardment by the Entente Allies, especially with their air craft.

Zend Avesta, the religious book of the Parsees or representatives of the old creed of fireworshipers.

Zenith, the highest point in the heavens to a spectator at any given place, the point from which if the earth were absolutely spherical a perpendicular let fall would pass through its center.

Xenon, the name of a new element discovered by Professor Ramsay and Dr. Morris Travers when making the experiments with liquid air which resulted in the finding of neon and crypton.

Zeppelin, Count Ferdinand von, a German engineer; born in Constance, Switzerland, July 8, 1838; educated at the Ludwigsburg War School and the University of Tübingen; studied military methods in the American Civil War; was active in the Franco-Prussian War; took up the study of aeronautics; and perfected his first dirigible balloon in 1900. From this was developed the air-craft bearing his name, which for a long period was one of the terrors of the World War. He died March 8, 1917.

Zero, in common language means nothing; in arithmetic it is called naught, and means no number; in algebra, it stands for no quantity.

Zeus, the greatest of the national deities of ancient Greece; according to the most received mythology, son of Cronos and Rhea. With the help of his brothers and sisters, Poseidon, Hades, Hestia, Hera, and Demeter, he overthrew Cronos and the Titans, assumed the sovereignty of the Universe, and took as his peculiar province the heaven above, giving to Hades the infernal regions, to Poseidon the sea, the earth being left subject to the influence of all three, though to Zeus belonged the supremacy.

Zinc, a bluish-white lustrous metal which does not occur in the native state, but is obtained from its ores, chiefly the sulphide, or zinc-blende, the carbonate, or calamine, found in the United States and various parts of Europe. Zinc has a crystaline lamellar structure, and a low melting point.

The production of zinc from domestic ores in the United States broke all former records in 1926, when the entire output amounted to 611,991 short tons, having a total valuation of $113,617,000.

Zincography, an art analogous to lithography.

Zion, or **Sion,** the highest and most S. mount of Jerusalem; rising about 2,500 feet above the Mediterranean, and from 200 to 300 feet above the valleys at its base. It was a fortified town of the Jebusites till subdued by David, and thenceforward was called the "City of David." A mosque near its S. brow now covers the "tomb of David" so called, most jealously guarded by the Mohammedans. On it were erected the magnificent palaces of Solomon, and long afterward those of Herod. At the present day a considerable portion of it lies outside the modern wall on the south.

Zionism, a name given to a scheme for the acquisition of Palestine by purchase from Turkey, with a view to establishing the Jews in the Holy Land.

Zionism has made great progress, and is championed by some of the greatest living Jews. While its aim is to populate Palestine with Jews, and provide a refuge there for some of the persecuted Jewish millions of Russia, Rumania, etc., it is not averse to Jewish settlement in other desirable localities, and a suggestion from the Federation of American Zionists through Jacob H. Schiff (q. v.) in Dec., 1906, for a settlement near Galveston, Texas, was regarded favorably by Zionist leaders.

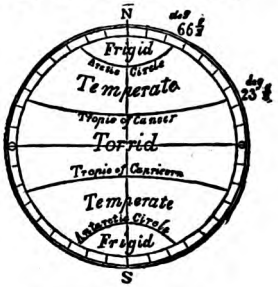
Zither, or **Zithern,** a development of the musical instrument known to the Greeks as cithara. In the early part of the 19th century it became a favorite with the peasantry of the Styrian and Bavarian Alps.

Zodiacal Light, a pearly glow spreading over a portion of the sky near the point at which the sun is just about to rise in the morning or has just set in the evening. It extends from the horizon to a considerable distance toward the zenith, and is best seen in the tropics in spring evenings.

Zoe, Empress of the East; daughter of Constantine IX.; a bad woman, but a strong and able ruler. Died, aged 72, in A. D. 1052.

Zola, Emile, a French novelist; born in Paris, France, April 2, 1840; the son of an Italian engineer. After working for Paris publishers and writing for the press he attempted fiction with success. During 1897 and 1898 he took up with splendid courage the cause of Captain Dreyfus, whom he declared to have been illegally condemned, and was in consequence of his action prosecuted by order of the French government, and condemned to imprisonment. He escaped punishment by voluntary exile in England. Returning to Paris after the subsidence of the excitement caused by the Dreyfus case, he resumed his literary work, but lived only till the night of Sept. 28, 1902, when he was accidentally killed by gas escaping from a coal fire.

Zollars, Ely Vaughan, an American educator; born in Lower Salem, O., Sept. 17, 1847; was graduated at Bethany College in 1875; was president of the Kentucky Classical and Business College in 1877–1884 and of the Gerrard Female College in 1884–1885; pastor of the Church of Christ, Springfield, Ill., in 1855–1888; and became president of Hiram College in 1888. He died Feb. 10, 1916.



ZONES OF THE EARTH.

Zone, in anatomy, a region of the body formed by imaginary lines drawn around it transversely; used specifically, of the abdominal zones or regions. In biology, a stripe or belt, as of color, on a plant, a shell, etc. Also a certain stratum of sea water, the depth of the upper and under surfaces of which are generally measured or calculated in fathoms.

In geography, one of five imaginary

belts surrounding the earth. They are the North Frigid Zone, between the North Pole and the Arctic Circle; the North Temperate Zone, between the Arctic Circle and the Tropic of Cancer; the Torrid Zone, between the Tropic of Cancer and the Tropic of Capricorn; the South Temperate Zone, between the Tropic of Capricorn and the Antarctic Circle; and the South Frigid Zone, between the Antarctic Circle and the South Pole.

Zoölatry, animal worship; adoration paid by man to any of the lower animals. This cultus seems to have passed through three stages: (1) The animal was reverenced and propitiated as possessing a power greater than that of man. (2) The animal was regarded as an incarnation of some deity or spirit. (3) It was raised to the position of a tribal ancestor.

Zoölogical Garden, a public garden in which a collection of animals is kept. There are in the United States seven zoölogical gardens — at New York, Philadelphia, Cincinnati, Chicago, Cleveland, St. Louis, and San Francisco. The S. E. section of Bronx Park (654 acres), New York, comprising 261 acres, is in charge of the New York Zoölogical Society, which is developing there the most extensive zoölogical garden in the country, containing 55 different series of buildings, cages, and ranges.

Zoölogy, that portion of natural history which treats of the classification, structure, habits and habitations of animals. Closely related to zoölogy is the study of embryology, while comparative anatomy and physiology are the branches which dominate the study of the physical structure of man. Living matter, or bioplasm, may be considered physically as a peculiar compound of the chemical elements — carbon, oxygen, nitrogen, and hydrogen, called by Mulder proteine, and by Huxley and the German histologists protoplasm, or the physical basis of life. It is nearly identical with albumen. So far as is known, this combination of elements is always the product of pre-existing living matter. The term bioplasm is well applied to express matter in its living state, while protoplasm should be restricted to the material itself. Bioplasm is a semi-fluid substance, yet it will not freeze at 32° F., as water does, proving that, in this respect, at least, it is different from water. If we consider their origin, both animals and plants begin life as a small particle of bioplasm. In plants this forms an ovule, with a wall of cellulose; in animals it becomes an ovum or egg, with a wall of albuminous matter, in which life develops.

Zoroaster (so the Greeks pronounced the name of Zarathushtra), the founder or reformer of the ancient religion of the Parsees. He appears as a historical person only in the earliest portion of the Avesta, the Gathic hymns, where the aspirations, hopes, and fears of an actual human agent are unmistakably present. His name means "Bay camels." His father was Pourusaspa, "Many horses"; his wife was Hvogvi; his daughter was Pouruchista, the Discreet. His family name was Spitama. This much we may accept from the statements of documents, but as soon as we leave the last Gatha, which was the wedding song of his daughter, we have no reliable data. In the course of his career he composed religious-political hymns, the Gathas, of which we have now only fragments surviving in meters which appear (or reappear) in the Rik and in other parts of the Veda. The period in which he lived is uncertain, placed later than 800 B. C., and may be much earlier, according to good authority.

Zouave, a soldier belonging to the light infantry corps of the French army, which was organized in Algeria, soon after the conquest of that country in 1830, and was originally intended to be composed exclusively of the Kabyle tribe. This idea, however, was soon abandoned, and since 1840 the corps has been composed almost entirely of French soldiers, recruited from the veterans of ordinary line regiments, who are distinguished for their fine physique and tried courage.

Zuider Zee, a large gulf of the North Sea, penetrating deep into the Netherlands; about 60 miles in length, and 210 miles in circumference. The islands Texel, Vlieland, Ter Schelling, Ameland, and Schiermonnikoog, reaching in a chain from the most N. point of Holland, are the remains of a former line of coast, and form a breakwater against the North Sea. From Dunkirk in French

Flanders to the N. of Holland the interior is defended from the sea by sandhills or dunes. Here, as at the mouth of the Scheldt, the sand barrier was broken, and in 1282 the waters overflowing the low lands separated the province of Friesland from the peninsula of North Holland, and, having united with the small inner lake Flevo, formed the present Zuider Zee. In it lie the islands Wieringen, Urk, Schokland, and Marken. From the S. W. of the Zuider Zee a long narrow arm, called the Y (pronounced I), formerly ran nearly due W. through the peninsula of Holland. A strong sea dyke and locks have been constructed to cut off the Zuider Zee from the Y, through which there is a broad ship canal between Amsterdam and the North Sea. On both sides of the canal the Y has been drained and turned into about 12,000 acres of rich land. The waterway was formally opened by the king in 1876. A drainage scheme which a state commission (1892–1894) recommended, proposed to reclaim in 31 years, 450,000 acres at an estimated cost of $155,000,000.

Zulus, or **Amazulus,** that branch of the great Bantu division of the human family found in Natal, South Africa. Among the Bantu tribes, the Zulus are conspicuous for their physical and intellectual development. By nature the men are brave and are given to field sports, and, where opportunity offers, to border forays and intertribal strife. The Zulu polity is that of a pure democracy, the chiefs being elected, and holding office during the pleasure of the people. This pleasure is expressed through parents to subheads of districts, through them to the heads of larger districts, and through these in turn to the chief direct. Legislation occurs in the same way, through an expression of feeling from the body of the people to the chief through the heads of districts. A very complete, though unwritten, code of law, civil and criminal, exists and is well known to every adult Zulu. Polygamy is practised throughout the country, and has been from time immemorial; the marriage tie, however, with the 10th or 20th wife is as sacred as where monogamy prevails. As a race the Zulus are conspicuous for their morality and freedom from drunkenness and crime. Missionary efforts to Christianize have been more tolerated and acquiesced in than successful. The pursuits of the people are pastoral. Trading is little known, and the arts are limited to the primitive needs of simple iron work, pottery, and ornaments of copper, ivory, horn, or wood.

Zurich, capital of the canton of Zurich, Switzerland; 41 miles N. N. E. of Lucerne and 43 N. W. of Glarus, where the Limmat issues from Lake Zurich and unites with its tributary the Sihl. It is one of the most prosperous manufacturing and commercial towns of Switzerland; yet the narrow streets and lofty houses of its older quarters, on the high ground E. of the river, give it the quaint appearance of a mediæval city. Pop. with suburbs (1920) 207,161.

Zvornik, town of Jugo-Slavia, 2 miles from the Servian border, 48 miles N. E. of Serajevo (*q. v.*); on the left bank of the Drina river; was at one time a strongly fortified fort; has numerous argentiferous lead mines in the vicinity, a considerable trade in timber, and several manufactories. It was occupied by the Russians, Sept. 27, 1878, prior to the annexation of Bosnia and Herzegovina by Austria-Hungary. Pop. about 15,000.

Zwingli, or **Zuinglius, Ulric,** a Swiss reformer; born in the hamlet of Wildhaus, in the Tockenburg, Jan. 1, 1484. He eagerly studied the classics, and became one of the best scholars of his time. He was also passionately fond of music, and learned to play well on the flute, the lute, the violin, and other instruments. In 1506 he was ordained priest, and accepted the place of pastor of Glarus, which he filled with zeal and devotedness for 10 years. During this period thoughts were working in his mind, which were the germs of the reformation to come. He twice accompanied the Swiss auxiliaries to the wars in Italy, fought at the battle of Marignano; and used his influence with his countrymen to dissuade them from foreign military service. In 1514 he had visited Erasmus at Basel, and was greatly influenced by his writings.

The year of 1516 Zwingli has noted as the period of the commencement of the Swiss Reformation. He was killed in battle Oct. 11, 1531.

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